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PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

\* \* \* \* \* \* \* \* \* Welcome to STN International \* \* \* \* \* \* \* \* \*

NEWS 1 Web Page for STN Seminar Schedule - N. America  
NEWS 2 NOV 21 CAS patent coverage to include exemplified prophetic substances identified in English-, French-, German-, and Japanese-language basic patents from 2004-present  
NEWS 3 NOV 26 MARPAT enhanced with FSORT command  
NEWS 4 NOV 26 CHEMSAFE now available on STN Easy  
NEWS 5 NOV 26 Two new SET commands increase convenience of STN searching  
NEWS 6 DEC 01 ChemPort single article sales feature unavailable  
NEWS 7 DEC 12 GBFULL now offers single source for full-text coverage of complete UK patent families  
NEWS 8 DEC 17 Fifty-one pharmaceutical ingredients added to PS  
NEWS 9 JAN 06 The retention policy for unread STNmail messages will change in 2009 for STN-Columbus and STN-Tokyo  
NEWS 10 JAN 07 WPIDS, WPINDEX, and WPIX enhanced Japanese Patent Classification Data  
NEWS 11 FEB 02 Simultaneous left and right truncation (SLART) added for CERAB, COMPUAB, ELCOM, and SOLIDSTATE  
NEWS 12 FEB 02 GENBANK enhanced with SET PLURALS and SET SPELLING  
NEWS 13 FEB 06 Patent sequence location (PSL) data added to USGENE  
NEWS 14 FEB 10 COMPENDEX reloaded and enhanced  
NEWS 15 FEB 11 WTEXTILES reloaded and enhanced  
NEWS 16 FEB 19 New patent-examiner citations in 300,000 CA/CAplus patent records provide insights into related prior art  
NEWS 17 FEB 19 Increase the precision of your patent queries -- use terms from the IPC Thesaurus, Version 2009.01  
NEWS 18 FEB 23 Several formats for image display and print options discontinued in USPATFULL and USPAT2  
NEWS 19 FEB 23 MEDLINE now offers more precise author group fields and 2009 MeSH terms  
NEWS 20 FEB 23 TOXCENTER updates mirror those of MEDLINE - more precise author group fields and 2009 MeSH terms  
NEWS 21 FEB 23 Three million new patent records blast AEROSPACE into STN patent clusters  
NEWS 22 FEB 25 USGENE enhanced with patent family and legal status display data from INPADOCDB  
NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3,  
AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

NEWS HOURS STN Operating Hours Plus Help Desk Availability  
NEWS LOGIN Welcome Banner and News Items  
NEWS IPC8 For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 16:33:29 ON 03 MAR 2009

FILE 'REGISTRY' ENTERED AT 16:33:42 ON 03 MAR 2009  
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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 2 MAR 2009 HIGHEST RN 1114593-79-1  
DICTIONARY FILE UPDATES: 2 MAR 2009 HIGHEST RN 1114593-79-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH January 9, 2009.

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stn/gen/stndoc/properties.html>

```
=> s (0-0.01 C/mac and 80-100 FE/mac)
    97945 0-0.01/MAC
    274687 C/MAC
    20355 0-0.01 C/MAC
          (0-0.01/MAC (P) C/MAC)
    526040 80-100/MAC
    560408 FE/MAC
    273402 80-100 FE/MAC
          (80-100/MAC (P) FE/MAC)
L1      13473 (0-0.01 C/MAC AND 80-100 F
```

=> s (0-0.01 C/mac and 10-14 Cr/mac and 3-8 Ni/mac and 0.05-1 Si/mac and 0.1-2 Mn/mac and 0-0.3 P/mac and 0-0.01 S/mac and 0-0.1 Al/mac and 60-100 Fe/mac)  
 97945 0-0.01/MAC  
 274687 C/MAC  
 20355 0-0.01 C/MAC  
 (0-0.01/MAC (P) C/MAC)  
 208289 10-14/MAC  
 346840 CR/MAC  
 46905 10-14 CR/MAC  
 (10-14/MAC (P) CR/MAC)

429024 3-8/MAC  
 342995 NI/MAC  
 55978 3-8 NI/MAC  
     (3-8/MAC (P) NI/MAC)  
 620204 0.05-1/MAC  
 422180 SI/MAC  
 281966 0.05-1 SI/MAC  
     (0.05-1/MAC (P) SI/MAC)  
 689927 0.1-2/MAC  
 394638 MN/MAC  
 327078 0.1-2 MN/MAC  
     (0.1-2/MAC (P) MN/MAC)  
 477486 0-0.3/MAC  
 52957 P/MAC  
 34312 0-0.3 P/MAC  
     (0-0.3/MAC (P) P/MAC)  
 97945 0-0.01/MAC  
 26365 S/MAC  
 8368 0-0.01 S/MAC  
     (0-0.01/MAC (P) S/MAC)  
 337810 0-0.1/MAC  
 269259 AL/MAC  
 33874 0-0.1 AL/MAC  
     (0-0.1/MAC (P) AL/MAC)  
 757105 60-100/MAC  
 560408 FE/MAC  
 380207 60-100 FE/MAC  
     (60-100/MAC (P) FE/MAC)

L2           7 (0-0.01 C/MAC AND 10-14 CR/MAC AND 3-8 NI/MAC AND 0.05-1 SI/MAC  
           AND 0.1-2 MN/MAC AND 0-0.3 P/MAC AND 0-0.01 S/MAC AND 0-0.1 AL/M  
           AC AND 60-100 FE/MAC)

=> s (0-0.01 C/mac and 10-14 Cr/mac and 3-8 Ni/mac and 0.05-1 Si/mac and 0.1-2  
 Mn/mac and 0-0.1 Al/mac and 60-100 Fe/mac)

97945 0-0.01/MAC  
 274687 C/MAC  
 20355 0-0.01 C/MAC  
     (0-0.01/MAC (P) C/MAC)  
 208289 10-14/MAC  
 346840 CR/MAC  
 46905 10-14 CR/MAC  
     (10-14/MAC (P) CR/MAC)  
 429024 3-8/MAC  
 342995 NI/MAC  
 55978 3-8 NI/MAC  
     (3-8/MAC (P) NI/MAC)  
 620204 0.05-1/MAC  
 422180 SI/MAC  
 281966 0.05-1 SI/MAC  
     (0.05-1/MAC (P) SI/MAC)  
 689927 0.1-2/MAC  
 394638 MN/MAC  
 327078 0.1-2 MN/MAC  
     (0.1-2/MAC (P) MN/MAC)  
 337810 0-0.1/MAC  
 269259 AL/MAC  
 33874 0-0.1 AL/MAC  
     (0-0.1/MAC (P) AL/MAC)  
 757105 60-100/MAC  
 560408 FE/MAC  
 380207 60-100 FE/MAC  
     (60-100/MAC (P) FE/MAC)

L3 166 (0-0.01 C/MAC AND 10-14 CR/MAC AND 3-8 NI/MAC AND 0.05-1 SI/MAC  
AND 0.1-2 MN/MAC AND 0-0.1 AL/MAC AND 60-100 FE/MAC)

=> d 12

L2 ANSWER 1 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 1086385-62-7 REGISTRY  
ED Entered STN: 18 Dec 2008  
CN Iron alloy, base, Fe 35-97, Ni 0-37, Cr 3-27, Mn 0-19, Co 0-17, Al 0-6, Mo  
0-6, Ti 0-6, Cu 0-3, Si 0-3, W 0-3, Nb 0-2.5, V 0-2.5, C 0-1, B 0-0.5, N 0-0.5, P  
0-0.5, S 0-0.5 (CA INDEX NAME)  
MF C . Al . B . Co . Cr . Cu . Fe . Mn . Mo . N . Nb . Ni . P . S . Si . Ti .  
V . W  
CI AYS  
SR CA  
LC STN Files: CA, CAPLUS

Component	Component Percent	Component Registry Number
Fe	35 - 97	7439-89-6
Ni	0 - 37	7440-02-0
Cr	3 - 27	7440-47-3
Mn	0 - 19	7439-96-5
Co	0 - 17	7440-48-4
Al	0 - 6	7429-90-5
Mo	0 - 6	7439-98-7
Ti	0 - 6	7440-32-6
Cu	0 - 3	7440-50-8
Si	0 - 3	7440-21-3
W	0 - 3	7440-33-7
Nb	0 - 2.5	7440-03-1
V	0 - 2.5	7440-62-2
C	0 - 1	7440-44-0
B	0 - 0.5	7440-42-8
N	0 - 0.5	17778-88-0
P	0 - 0.5	7723-14-0
S	0 - 0.5	7704-34-9

1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d 12 2-7

L2 ANSWER 2 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
RN 952596-62-2 REGISTRY  
ED Entered STN: 07 Nov 2007  
CN Iron alloy, base, Fe 42-100, Cr 0-20, Cu 0-8, Ni 0-8, misch metal 0-4, Nb  
0-4, Ti 0-4, Al 0-3, Mn 0-2, Si 0-2, Ca 0-1, C 0-0.8, N 0-0.6, O 0-0.2, P 0-0.1, S  
0-0.1 (CA INDEX NAME)  
MF C . Al . Ca . Cr . Cu . Fe . Mn . N . Nb . Ni . O . P . S . Si . Ti .  
Unspecified  
CI AYS  
SR CA  
LC STN Files: CA, CAPLUS

Component	Component Percent	Component Registry Number
Fe	42 - 100	7439-89-6
Cr	0 - 20	7440-47-3

Cu	0	-	8	7440-50-8
Ni	0	-	8	7440-02-0
Misch metal	0	-	4	8049-20-5
Nb	0	-	4	7440-03-1
Ti	0	-	4	7440-32-6
Al	0	-	3	7429-90-5
Mn	0	-	2	7439-96-5
Si	0	-	2	7440-21-3
Ca	0	-	1	7440-70-2
C	0	-	0.8	7440-44-0
N	0	-	0.6	17778-88-0
O	0	-	0.2	17778-80-2
P	0	-	0.1	7723-14-0
S	0	-	0.1	7704-34-9

\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 3 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 618380-19-1 REGISTRY  
 ED Entered STN: 19 Nov 2003  
 CN Iron alloy, base, Fe 47-100, Cr 0-20, Mn 0-10, Ni 0-10, Al 0-4, N 0-4, Si 0-4, P 0-0.5, C 0-0.2, Nb 0-0.2, Ti 0-0.2, S 0-0.1 (9CI) (CA INDEX NAME)  
 MF C . Al . Cr . Fe . Mn . N . Nb . Ni . P . S . Si . Ti  
 CI AYS  
 SR CA  
 LC STN Files: CA, CAPLUS

Component	Component	Component	
	Percent	Registry Number	
Fe	47	- 100	7439-89-6
Cr	0	- 20	7440-47-3
Mn	0	- 10	7439-96-5
Ni	0	- 10	7440-02-0
Al	0	- 4	7429-90-5
N	0	- 4	17778-88-0
Si	0	- 4	7440-21-3
P	0	- 0.5	7723-14-0
C	0	- 0.2	7440-44-0
Nb	0	- 0.2	7440-03-1
Ti	0	- 0.2	7440-32-6
S	0	- 0.1	7704-34-9

1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 4 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 478244-08-5 REGISTRY  
 ED Entered STN: 07 Jan 2003  
 CN Iron alloy, base, Fe 35-100, Cr 0-25, Ni 0-10, Co 0-5, Cu 0-5, W 0-5, Al 0-4, Mn 0-3, Hf 0-1, Mo 0-1, Nb 0-1, Ta 0-1, Ti 0-1, V 0-1, Zr 0-1, C 0-0.3, P 0-0.3, S 0-0.1, Si 0-0.1 (9CI) (CA INDEX NAME)  
 MF C . Al . Co . Cr . Cu . Fe . Hf . Mn . Mo . Nb . Ni . P . S . Si . Ta . Ti . V . W . Zr  
 CI AYS  
 SR CA  
 LC STN Files: CA, CAPLUS, USPAT2, USPATFULL

Component	Component Percent	Component Registry Number
Fe	35	- 100
Cr	0	- 25
Ni	0	- 10
Co	0	- 5
Cu	0	- 5
W	0	- 5
Al	0	- 4
Mn	0	- 3
Hf	0	- 1
Mo	0	- 1
Nb	0	- 1
Ta	0	- 1
Ti	0	- 1
V	0	- 1
Zr	0	- 1
C	0	- 0.3
P	0	- 0.3
S	0	- 0.1
Si	0	- 0.1

1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 5 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 157389-78-1 REGISTRY  
 ED Entered STN: 01 Sep 1994  
 CN Iron alloy, base, Fe 78-92,Cr 8-14,Ni 0-4,Mn 0-2,Si 0-1,Nb 0-0.3,Al  
 0-0.2,P 0-0.2,S 0-0.2,C 0-0.1 (9CI) (CA INDEX NAME)  
 MF C . Al . Cr . Fe . Mn . Nb . Ni . P . S . Si  
 CI AYS  
 SR CA  
 LC STN Files: CA, CAPLUS

Component	Component Percent	Component Registry Number
Fe	78	- 92
Cr	8	- 14
Ni	0	- 4
Mn	0	- 2
Si	0	- 1
Nb	0	- 0.3
Al	0	- 0.2
P	0	- 0.2
S	0	- 0.2
C	0	- 0.1

1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 6 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 157349-30-9 REGISTRY  
 ED Entered STN: 31 Aug 1994  
 CN Iron alloy, base, Fe 71-91,Cr 8-16,Cu 1-5,Ni 0-4,Mn 0-2,Si 0-1,Al 0-0.2,P  
 0-0.2,S 0-0.2,C 0-0.1,N 0-0.1 (9CI) (CA INDEX NAME)  
 MF C . Al . Cr . Cu . Fe . Mn . N . Ni . P . S . Si  
 CI AYS  
 SR CA  
 LC STN Files: CA, CAPLUS

Component	Component Percent	Component Registry Number
Fe	71	7439-89-6
Cr	8	7440-47-3
Cu	1	7440-50-8
Ni	0	7440-02-0
Mn	0	7439-96-5
Si	0	7440-21-3
Al	0	7429-90-5
P	0	7723-14-0
S	0	7704-34-9
C	0	7440-44-0
N	0	17778-88-0

1 REFERENCES IN FILE CA (1907 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L2 ANSWER 7 OF 7 REGISTRY COPYRIGHT 2009 ACS on STN  
 RN 39392-39-7 REGISTRY  
 ED Entered STN: 16 Nov 1984  
 CN Iron alloy, base, Fe 76-79,Cr 14.00-15.00,Ni 6.00-7.00,Ti 0.55-0.90,Mn  
 0-0.50,Mo 0-0.30,Si 0-0.30,Al 0-0.10,C 0-0.05,P 0-0.030,S 0-0.030 (UNS  
 S36200) (9CI) (CA INDEX NAME)

OTHER NAMES:

CN A564-XM9  
 CN Almar 362  
 CN AMS 5739  
 CN AMS 5740  
 CN ASME SA564-XM9  
 CN ASME SA693-XM9  
 CN ASME SA705-XM9  
 CN UNS S36200  
 CN XM 9  
 MF C . Al . Cr . Fe . Mn . Mo . Ni . P . S . Si . Ti  
 CI AYS  
 LC STN Files: CA, CAPLUS

Component	Component Percent	Component Registry Number
Fe	76	7439-89-6
Cr	14.00	7440-47-3
Ni	6.00	7440-02-0
Ti	0.55	7440-32-6
Mn	0	7439-96-5
Mo	0	7439-98-7
Si	0	7440-21-3
Al	0	7429-90-5
C	0	7440-44-0
P	0	7723-14-0
S	0	7704-34-9

7 REFERENCES IN FILE CA (1907 TO DATE)  
 7 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> file caplus, uspatfull  
 COST IN U.S. DOLLARS  
 FULL ESTIMATED COST

SINCE FILE ENTRY	TOTAL SESSION
113.05	113.27

FILE 'CAPLUS' ENTERED AT 16:36:45 ON 03 MAR 2009  
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FILE 'USPATFULL' ENTERED AT 16:36:45 ON 03 MAR 2009  
CA INDEXING COPYRIGHT (C) 2009 AMERICAN CHEMICAL SOCIETY (ACS)

=> s 12  
L4 15 L2

=> s 13  
L5 205 L3

=> s 15 not L4  
L6 190 L5 NOT L4

=> d 14 ibib, abs

L4 ANSWER 1 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2008:1457152 CAPLUS  
DOCUMENT NUMBER: 150:9306  
TITLE: Packing rings  
INVENTOR(S): Bosch, Henry; Ruch, Roland; Steinert, Lutz; Wintrich, Klaus  
PATENT ASSIGNEE(S): Mahle International G.m.b.H., Germany  
SOURCE: Eur. Pat. Appl., 4pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1997921	A2	20081203	EP 2008-156343	20080516
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, MK, RS				
DE 102007025758	A1	20081204	DE 2007-102007025758	20070601
JP 2008304059	A	20081218	JP 2008-138913	20080528
PRIORITY APPLN. INFO.:			DE 2007-102007025758A	20070601
AB A packing ring, especially a shaft seal for a turbocharger, contains either an Fe alloy base material or a Ni alloy base material which is boronized. A thickness of the boronized layer is 1-50 µm.				

=> d 14 2-15 ibib, abs

L4 ANSWER 2 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2007:1176141 CAPLUS  
DOCUMENT NUMBER: 147:472700  
TITLE: Very thin hard steel sheet and method for producing the same  
INVENTOR(S): Murakami, Hidekuni  
PATENT ASSIGNEE(S): Nippon Steel Corporation, Japan  
SOURCE: PCT Int. Appl., 36pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007116913	A1	20071018	WO 2007-JP57575	20070404
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
EP 2003221	A1	20081217	EP 2007-741011	20070404
R: BE, DE, ES, FR, GB				
KR 2008106330	A	20081204	KR 2008-724085	20081001
PRIORITY APPLN. INFO.:			JP 2006-102766	A 20060404
			WO 2007-JP57575	W 20070404

AB Disclosed is a very thin hard steel sheet having a thickness of not more than 0.400 mm and containing, in mass %, 0-0.800% (inclusive) of C, 0-0.600% (inclusive) of N, 0-2.0% (inclusive) of Si, 0-2.0% (inclusive) of Mn, 0-0.10% (inclusive) of P, 0-0.100% (inclusive) of S, 0-3.0% (inclusive) of Al and 0-0.200% (inclusive) of O. Secondary phases having an average length of not less than 0.10  $\mu\text{m}$  and an average width of not less than 0.05  $\mu\text{m}$ , while satisfying the following relation: average length/average width  $\geq 2.0$  are contained in the steel sheet at a volume fraction of not less than 0.05%.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:868414 CAPLUS  
 DOCUMENT NUMBER: 139:352988  
 TITLE: High-strength steel sheet having refined crystal grain for high workability, plating adhesion, and toughness and its manufacture  
 INVENTOR(S): Murakami, Hidekuni  
 PATENT ASSIGNEE(S): Nippon Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003313637	A	20031106	JP 2003-27399	20030204
PRIORITY APPLN. INFO.:			JP 2002-41314	A 20020219
AB The claimed steel sheet contains C 0.0001-0.2, Si $\leq$ 4.0, Mn 0.01-10.0, P 0.001-0.5, S 0.0001-0.1, Al $\leq$ 4.0, and N 0.05-4.0 weight% and has average crystal grain size $\leq$ 5.0 $\mu\text{m}$ . Optionally, the steel sheet contains (1) Cr $\leq$ 20.0, (2) Ni $\leq$ 10.0, and/or (3) Ti $\leq$ 0.2, Nb $\leq$ 0.2, and/or B $\leq$ 0.02 weight%. Preferably, the steel sheet has $\geq$ 50 volume% ferrite and $\leq$ 20 volume% austenite. The sheet is manufactured by nitriding for increasing N content $\geq$ 0.03% to give $\geq$ 0.05% N.				

L4 ANSWER 4 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:964568 CAPLUS  
 DOCUMENT NUMBER: 138:27503  
 TITLE: High-strength hot-dip galvanized steel sheets  
 INVENTOR(S): Fujita, Nobuhiro; Azuma, Masafumi; Takahashi, Manabu;  
 Morimoto, Yasuhide; Kurosaki, Masao; Miyasaka, Akihiro  
 PATENT ASSIGNEE(S): Nippon Steel Corporation, Japan  
 SOURCE: PCT Int. Appl., 195 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002101112	A2	20021219	WO 2002-JP5627	20020606
WO 2002101112	A3	20041014		
W: AU, BR, CA, CN, IN, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2003055751	A	20030226	JP 2001-304034	20010928
JP 3898923	B2	20070328		
JP 2003105513	A	20030409	JP 2001-304036	20010928
JP 3898924	B2	20070328		
JP 2003105492	A	20030409	JP 2001-304037	20010928
JP 3898925	B2	20070328		
JP 2003171752	A	20030620	JP 2002-131643	20020507
CA 2449604	A1	20021219	CA 2002-2449604	20020606
CA 2449604	C	20080401		
AU 2002304255	A1	20021223	AU 2002-304255	20020606
TW 573021	B	20040121	TW 2002-91112291	20020606
EP 1504134	A2	20050209	EP 2002-733366	20020606
EP 1504134	B1	20070516		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
BR 2002010265	A	20050712	BR 2002-10265	20020606
CN 1639375	A	20050713	CN 2002-811523	20020606
CN 101125472	A	20080220	CN 2007-10140272	20020606
CN 101125473	A	20080220	CN 2007-10140273	20020606
CN 101264681	A	20080917	CN 2007-10140271	20020606
US 20040202889	A1	20041014	US 2003-479916	20031205
US 7267890	B2	20070911		
KR 753244	B1	20070830	KR 2003-716036	20031206
KR 747133	B1	20070809	KR 2007-703396	20070212
US 20080035247	A1	20080214	US 2007-893935	20070816
PRIORITY APPLN. INFO.:				
		JP 2001-170857	A	20010606
		JP 2001-211942	A	20010712
		JP 2001-304034	A	20010928
		JP 2001-304035	A	20010928
		JP 2001-304036	A	20010928
		JP 2001-304037	A	20010928
		JP 2002-131643	A	20020507
		CN 2002-811523	A3	20020606
		WO 2002-JP5627	W	20020606
		US 2003-479916	A3	20031205
		KR 2003-716036	A3	20031206

AB The steel comprises C 0.0001-0.3, Si 0.01-2.5, Mn 0.01-3, Al 0.001-4, Mo 0-5 weight% and may be addnl. alloyed by Cr 0.001-25, Ni 0.001-10, Cu 0.001-5, Co 0.001-5, and W 0.001-5 weight%. The steel may also comprise one or more Nb, Ti, V, Zr, Hf, and Ta in the amount of 0.001-1 weight% in total. At the interface between the plated layer and the steel sheet the steel

may contain SiO<sub>2</sub>, MnO, and Al<sub>2</sub>O<sub>3</sub> 0.1-70% in total area percentage and also one or more Y<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub>, HfO<sub>2</sub>, TiO<sub>3</sub>, La<sub>2</sub>O<sub>3</sub>, Ce<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, CaO, and MgO 0.0001-10.0%. The steel is hot-dip galvanized with the plating layer containing Al 0.001-0.5, Mn 0.001-2 weight% and Zn the balance. The plating layer may also comprise Mo 0.0001-1 and Fe 5-20 weight%. In one embodiment, the plating layer comprises Mn 0.001-3, Al 0.001-4, Mo 0.0001-1, Fe <5 weight% and the balance Zn. The maximum depth of the grain boundary oxidized layer formed at the interface between the plated layer and the steel is ≤0.5 μm. The hot-dip galvanized steel sheets have improved plating adhesion, high strength, ductility, fatigue resistance, and corrosion resistance, particular in an environment containing chlorine ions. The manufacturing method is also claimed.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1994:538704 CAPLUS  
 DOCUMENT NUMBER: 121:138704  
 ORIGINAL REFERENCE NO.: 121:25019a,25022a  
 TITLE: Manufacture of martensitic stainless steels with corrosion resistance  
 INVENTOR(S): Hara, Takuya; Takahashi, Akihiko; Ogawa, Hiroyuki  
 PATENT ASSIGNEE(S): Nippon Steel Corp, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06128632	A	19940510	JP 1992-274622	19921013
PRIORITY APPLN. INFO.:			JP 1992-274622	19921013

AB The process comprises rolling steels containing C ≤0.1, Si ≤1, Mn ≤2, P ≤0.025, S ≤0.015, Cr 8-14, Ni ≤4, Al 0.005-0.2, Nb 0.005-0.3, and N ≤0.015% at 800-900° and draft ≥65%. The stainless steels show resistance to CO<sub>2</sub> corrosion.

L4 ANSWER 6 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1994:538618 CAPLUS  
 DOCUMENT NUMBER: 121:138618  
 ORIGINAL REFERENCE NO.: 121:25011a,25014a  
 TITLE: Manufacture of martensitic stainless steels with good corrosion resistance and toughness  
 INVENTOR(S): Hara, Takuya; Takahashi, Akihiko; Ogawa, Hiroyuki; Kawakami, Satoru  
 PATENT ASSIGNEE(S): Nippon Steel Corp, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06128627	A	19940510	JP 1992-274623	19921013
PRIORITY APPLN. INFO.:			JP 1992-274623	19921013

AB The steels are manufactured by normalizing steels containing C ≤0.1, Si ≤1, Mn ≤2, P ≤0.025, S ≤0.015, Cr 8-16, Ni ≤4, Cu 1-5, Al 0.005-0.2, and N ≤0.1% at 800-900°.

The stainless steels show resistance to CO<sub>2</sub> corrosion.

L4 ANSWER 7 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1988:496746 CAPLUS  
DOCUMENT NUMBER: 109:96746  
ORIGINAL REFERENCE NO.: 109:16097a, 16100a  
TITLE: The corrosion of stainless steels in the atmosphere  
AUTHOR(S): Kearns, J. R.; Johnson, M. J.; Pavik, P. J.  
CORPORATE SOURCE: Allegheny Ludlum Steel Div., Allegheny Ludlum Corp.,  
Brackenridge, PA, 15014-1597, USA  
SOURCE: ASTM Special Technical Publication (1987), 965(Degrad.  
Met. Atmos.), 35-51  
CODEN: ASTTA8; ISSN: 0066-0558  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB A total of 38 types of stainless steel were exposed for 1-15 yr at a coastal site and 32 yr in a semirural atmospheric. The resistance of stainless steels to degradation in the atmospheric was directly related to alloy Cr and Mo

contents. Only AISI Type 410 showed any signs of corrosion in the semirural environment. Significant corrosion product tarnishing occurred on all non-Mo-bearing grades after only 1 yr of exposure in the marine atmospheric. Grades sensitized by an autogenous welding were susceptible to preferential corrosion at weld and heat-affected zone surfaces when exposed at the 250-m lot on Kure Beach, NC. Galvanic attack and corrosion product staining was observed for certain dissimilar metal couples between AISI Type 304 and other com. pure metals, Ni-base and Cu-base alloys. A photometric technique was used to quant. describe subtle changes in the appearance of 3 stainless steel surface finishes during exposure in a semirural atmospheric

L4 ANSWER 8 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1988:224971 CAPLUS  
DOCUMENT NUMBER: 108:224971  
ORIGINAL REFERENCE NO.: 108:36889a, 36892a  
TITLE: Appearance and corrosion of stainless steels in the atmosphere  
AUTHOR(S): Kearns, J. R.; Barkowski, L. R.  
CORPORATE SOURCE: Allegheny Ludlum Steel Div., Allegheny Ludlum Corp.,  
Brackenridge, PA, 15014, USA  
SOURCE: Materials Performance (1988), 27(2), 47-54  
CODEN: MTPFB1; ISSN: 0094-1492  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The resistance of 38 stainless steels, representing 12 classes, to atmospheric degradation was directly related to the Cr and Mo contents determined by spectrophotometric measurements and a visual rating system. Only AISI 410 exhibited any signs of corrosion in a semi-rural environment. Significant corrosion product staining occurred on all Mo-free stainless grades that were exposed 2-15 yr at the Kure Beach test sites. Stainless grades sensitized by an autogenous welding were susceptible to preferential corrosion at weld and heat-affected zone surfaces when exposed to the coastal environment. Galvanic attack and corrosion product staining was observed for certain dissimilar metal couples between AISI 304 and various nonferrous metals. Photometric technol. provided an efficient, reliable, and quant. test technique superior to conventional methods for evaluating the relative performance of stainless steels in the atmospheric

L4 ANSWER 9 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1986:595517 CAPLUS  
DOCUMENT NUMBER: 105:195517

ORIGINAL REFERENCE NO.: 105:31491a,31494a  
TITLE: Clad spring for electric conduction  
INVENTOR(S): Sanki, Sadahiko; Yamaguchi, Kenji; Miyake, Yasuhiko;  
Yoshida, Zenichi  
PATENT ASSIGNEE(S): Hitachi Cable, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61114415	A	19860602	JP 1984-235674	19841108
JP 04074115	B	19921125		

PRIORITY APPLN. INFO.: JP 1984-235674 19841108  
AB The clad spring materials comparable with Cu-Be alloy springs are manufactured from precipitation-hardening martensitic stainless steel containing Cr 11-18, Ni 3-11, and  $\geq 1$  of Ti, Al, Cu, Si, Mo, Nb, Ta, and Co  $\leq 2.5\%$ . The stainless steel is clad on/or both sides with Cu alloy (elec. conductivity  $\geq 80\%$  IACS) containing 0.02-0.3% Zr or 0.2-1.7% Cr. The critical spring value of the product at 10-30% elec. conductivity is .apprx.40-75 kg/mm<sup>2</sup>.

L4 ANSWER 10 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1976:48433 CAPLUS  
DOCUMENT NUMBER: 84:48433  
ORIGINAL REFERENCE NO.: 84:7951a,7954a  
TITLE: Environmentally assisted crack growth in high strength steels  
AUTHOR(S): Munford, J.  
CORPORATE SOURCE: Sandia Lab., Albuquerque, NM, USA  
SOURCE: Report (1975), SAND-74-0270, 16 pp. Avail.: Dep. NTIS From: Nucl. Sci. Abstr. 1975, 31(12), Abstr. No. 33785  
DOCUMENT TYPE: Report  
LANGUAGE: English  
AB Results of stress-corrosion cracking tests on high-strength steels, 18 N 200 [12742-85-7], 18 Ni 250 [12723-02-3], Almar 362 [39392-39-7], and HP 9-4-20 [53024-11-6] are presented. Test data are shown graphically.

L4 ANSWER 11 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1975:6380 CAPLUS  
DOCUMENT NUMBER: 82:6380  
ORIGINAL REFERENCE NO.: 82:1059a,1062a  
TITLE: Preliminary fracture toughness survey of high-strength steel sheet  
AUTHOR(S): Hickerson, J. P., Jr.  
CORPORATE SOURCE: Sandia Lab., Albuquerque, NM, USA  
SOURCE: Report (1974), SLA-73-498, 19 pp. Avail.: Dep. NTIS From: Nucl. Sci. Abstr. 1974, 30(1), 870  
DOCUMENT TYPE: Report  
LANGUAGE: English  
AB A fracture-toughness survey was made of 2.04-mm-thick sheets from 6 high-strength steels: 18Ni200, 18Ni250, 18Ni350, HP9-4-20, Almar 362, and PH 1408 Mo. Addnl. tests were also conducted on welds made on 18Ni200, Almar 362, and HP9-4-20. The test procedures, data anal., and test results are presented and discussed.

L4 ANSWER 12 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1973:65866 CAPLUS

DOCUMENT NUMBER: 78:65866  
ORIGINAL REFERENCE NO.: 78:10397a, 10400a  
TITLE: Viscoelastic analysis of in-pile stress relaxation  
AUTHOR(S): Wolfe, R. A.; Hyatt, B. Z.  
CORPORATE SOURCE: Bettis At. Power Lab., Pittsburgh, PA, USA  
SOURCE: Journal of Nuclear Materials (1972), 45(3), 181-94  
CODEN: JNUMAM; ISSN: 0022-3115  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB In-pile stress relaxation expts. for Almar 362, a maraging stainless steel, were conducted at 140 and 595°F. and with average fast n fluxes of 1.7 + 1014 and 2.8 + 1014 n/cm<sup>2</sup>-sec (E > 1 MeV). The general shape of the relaxation curves fit the Maxwell-Kelvin viscoelastic model. There was a neg. temperature dependence for the stress relaxation.

L4 ANSWER 13 OF 15 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1966:82706 CAPLUS  
DOCUMENT NUMBER: 64:82706  
ORIGINAL REFERENCE NO.: 64:15476c-e  
TITLE: Stainless steels in the chemical industry  
AUTHOR(S): Renshaw, William G.  
CORPORATE SOURCE: Allegheny Ludlum Steel Corp., Brackenridge, PA, USA  
SOURCE: Materials Protection (1966), 5(3), 37-40  
CODEN: MAPRAM; ISSN: 0025-5378  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Newly developed, high-strength Cr-Ni stainless steels which might be used to economic advantage in the chemical industry are classified as semi-austenitic, precipitation-hardening types such as AM-550 and AM-355, and martensitic age-hardenable types such as Almar 362 and Almar 363. Both of the latter are easily formed in the annealed condition because the martensite is relatively soft and capable of severe deformation without cracking. Almar 363, available primarily as a sheet product, is an inexpensive, high-strength material suitable for process equipment or supporting structures. No hardening treatment is required and it is welded easily. Almar 362 is similar to Almar 363 in the annealed condition but can be age-hardened to about Rockwell C 45 and high-yield strengths by a simple heat treatment at 482-621°. It has better corrosion resistance because of its higher Cr and Ni contents (14.5 and 6.5%, resp.). Machinability is good, even when age-hardened. A new heat treatment to produce a structure free of grain boundary carbides in AM-355 (a bar and forging alloy) offers high strength and corrosion resistance. Corrosion rates are given for these 4 alloys in 25% and 65% boiling HNO<sub>3</sub>, 20% boiling H<sub>3</sub>PO<sub>4</sub>, 60% boiling AcOH, and 0.56% HCl at 38°.

L4 ANSWER 14 OF 15 USPATFULL on STN  
ACCESSION NUMBER: 2008:40636 USPATFULL  
TITLE: High-strength hot-dip galvanized steel sheet and hot-dip galvannealed steel sheet having fatigue resistance, corrosion resistance, ductility and plating adhesion, after severe deformation, and a method of producing the same  
INVENTOR(S): Fujita, Nobuhiro, Futtsu-shi, JAPAN  
Azuma, Masafumi, Futtsu-shi, JAPAN  
Takahashi, Manabu, Futtsu-shi, JAPAN  
Morimoto, Yasuhide, Futtsu-shi, JAPAN  
Kuroaki, Masao, Kitakyushu-shi, JAPAN  
Miyasaka, Akihiro, Futtsu-shi, JAPAN  
PATENT ASSIGNEE(S): Nippon Steel Corporation, Tokyo, JAPAN (non-U.S. corporation)

NUMBER	KIND	DATE
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PATENT INFORMATION:	US 20080035247	A1	20080214
APPLICATION INFO.:	US 2007-893935	A1	20070816 (11)
RELATED APPLN. INFO.:	Division of Ser. No. US 2003-479916, filed on 5 Dec 2003, GRANTED, Pat. No. US 7267890 A 371 of International Ser. No. WO 2002-JP5627, filed on 6 Jun 2002		

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2001-170857	20010606
	JP 2001-211942	20010712
	JP 2001-304034	20010928
	JP 2001-304035	20010928
	JP 2001-304036	20010928
	JP 2001-304037	20010928
	JP 2002-131643	20020507
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	KENYON & KENYON LLP, ONE BROADWAY, NEW YORK, NY, 10004, US	
NUMBER OF CLAIMS:	12	
EXEMPLARY CLAIM:	1	
LINE COUNT:	4598	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides: a high-strength high-ductility hot-dip galvanized steel sheet and hot-dip galvannealed steel sheet having high fatigue resistance and corrosion resistance; a high-strength hot-dip galvanized steel sheet excellent in ductility, which improves non-plating defects and plating adhesion after severe deformation, and a method of producing the same; a high-strength and high-ductility hot-dip galvanized steel sheet having high fatigue resistance and corrosion resistance; a high-strength hot-dip galvanized steel sheet and hot-dip galvannealed steel sheet having superior appearance and workability, which suppresses the generation of non-plating defects, and a method of producing the same; and a high-strength hot-dip galvannealed steel sheet and a high-strength hot-dip galvanized steel sheet, which suppress non-plating defects and surface defects and have both corrosion resistance, in particular corrosion resistance in an environment containing chlorine ion, and high ductility, and a method of producing the same.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 15 OF 15	USPATFULL	on STN
ACCESSION NUMBER:	2004:260392 USPATFULL	
TITLE:	High-strength hot-dip galvanized steel sheet and hot-dip galvannealed steel sheet having fatigue resistance corrosion resistance ductility and plating adhesion after severe deformation and a method of producing the same	
INVENTOR(S):	Fujita, Nobuhiro, Futtsu-shi, JAPAN Azuma, Masafumi, Futtsu-shi, JAPAN Takahashi, Manabu, Futtsu-shi, JAPAN Morimoto, Yasuhide, Futtsu-shi, JAPAN Kurosaki, Masao, Kitakyushu-shi, JAPAN Miyasaka, Akihiro, Futtsu-shi, JAPAN	

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 20040202889	A1	20041014
	US 7267890	B2	20070911

APPLICATION INFO.: US 2003-479916 A1 20031205 (10)  
WO 2002-JP5627 20020606

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2001-170857	20010606
	JP 2001-211942	20010712
	JP 2001-304034	20010928
	JP 2001-304035	20010928
	JP 2001-304036	20010928
	JP 2001-304037	20010928
	JP 2002-131643	20020507
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	KENYON & KENYON, ONE BROADWAY, NEW YORK, NY, 10004	
NUMBER OF CLAIMS:	34	
EXEMPLARY CLAIM:	1	
LINE COUNT:	4585	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		
AB	The present invention provides: a high-strength high-ductility hot-dip galvanized steel sheet and hot-dip galvannealed steel sheet having high fatigue resistance and corrosion resistance; a high-strength hot-dip galvanized steel sheet excellent in ductility, which improves non-plating defects and plating adhesion after severe deformation, and a method of producing the same; a high-strength and high-ductility hot-dip galvanized steel sheet having high fatigue resistance and corrosion resistance; a high-strength hot-dip galvanized steel sheet and hot-dip galvannealed steel sheet having superior appearance and workability, which suppresses the generation of non-plating defects, and a method of producing the same; and a high-strength hot-dip galvannealed steel sheet and a high-strength hot-dip galvanized steel sheet, which suppress non-plating defects and surface defects and have both corrosion resistance, in particular corrosion resistance in an environment containing chlorine ion, and high ductility, and a method of producing the same.	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d cost COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
CONNECT CHARGES	1.89	4.09
NETWORK CHARGES	0.14	0.56
SEARCH CHARGES	0.00	96.30
DISPLAY CHARGES	46.86	61.21
FULL ESTIMATED COST	48.89	162.16
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-10.66	-10.66

IN FILE 'CAPLUS, USPATFULL' AT 16:38:09 ON 03 MAR 2009

=> s 15 and (stainless or stain-less)  
L7 124 L5 AND (STAINLESS OR STAIN-LESS)

=> s 15 and (martensitic)  
L8 58 L5 AND (MARTENSITIC)

=> d scan 17

L7 124 ANSWERS CAPLUS COPYRIGHT 2009 ACS on STN  
IC C22C038-42  
INCL 148037000  
CC 55-2 (Ferrous Metals and Alloys)  
TI Stainless steel castings  
ST stainless steel casting hardness; golf club stainless  
steel head; toughness stainless steel casting  
IT Cast metals and alloys  
RL: USES (Uses)  
(stainless steel, hardness, for golf club heads)  
IT 82680-96-4 82680-97-5 82680-98-6 82680-99-7 82681-00-3  
82681-01-4 82681-02-5 82681-03-6 82681-04-7 82681-05-8  
RL: USES (Uses)  
(castings, hardness and toughness of)  
IT 12597-68-1, properties  
RL: PRP (Properties)  
(hardness and toughness of, for golf club heads)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> d 17 2 pi

L7	ANSWER 2 OF 124 CAPLUS COPYRIGHT 2009 ACS on STN	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2008291282	A	20081204	JP 2007-135088	20070522	

=> d 17 3-124 pi

L7	ANSWER 3 OF 124 CAPLUS COPYRIGHT 2009 ACS on STN	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1975270	A1	20081001	EP 2008-6557	20080331	
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, MK, RS					
	JP 2008274398	A	20081113	JP 2008-8886	20080118	
	KR 2008089266	A	20081006	KR 2008-29046	20080328	
	CN 101275208	A	20081001	CN 2008-10090614	20080331	
	US 20080240970	A1	20081002	US 2008-78378	20080331	

L7	ANSWER 4 OF 124 CAPLUS COPYRIGHT 2009 ACS on STN	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2008087807	A1	20080724	WO 2007-JP73825	20071211	
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW					
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					

L7 ANSWER 5 OF 124 CAPLUS COPYRIGHT 2009 ACS on STN

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2008163431	A	20080717	JP 2006-356509	20061228
L7	ANSWER 6 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 2008163359	A	20080717	JP 2006-350723	20061227
L7	ANSWER 7 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 2008056983	A	20080313	JP 2006-234660	20060830
L7	ANSWER 8 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	SE 529010 SE 2005002312 AU 2006323251 WO 2007067134	C2 A A1 A1	20070410 20070410 20070614 20070614	SE 2005-2312 AU 2006-323251 WO 2006-SE50400	20051017 20061013 20061013
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	EP 1945385 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR	A1	20080723	EP 2006-847429	20061013
	KR 2008047469 CN 101291754	A	20080528 20081022	KR 2008-709076 CN 2006-80038719	20080416 20080417
L7	ANSWER 9 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 2007197786	A	20070809	JP 2006-18495	20060127
L7	ANSWER 10 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	CN 1948535	A	20070418	CN 2006-10097442	20061109
L7	ANSWER 11 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 2006274391	A	20061012	JP 2005-97774	20050330
L7	ANSWER 12 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 2006111932	A	20060427	JP 2004-301017	20041015
L7	ANSWER 13 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE

PI	US 20060065327	A1	20060330	US 2005-544887	20050805
	US 20040154706	A1	20040812	US 2003-431680	20030508
	US 6899773	B2	20050531		
	US 20040154707	A1	20040812	US 2003-706154	20031112
	US 6890393	B2	20050510		
	WO 2004072308	A2	20040826	WO 2004-US3876	20040206
	WO 2004072308	A3	20041014		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	IN 2005CN02176	A	20070727	IN 2005-CN2176	20051006
	US 20080073005	A1	20080327	US 2007-868078	20071005
	US 7470336	B2	20081230		
L7	ANSWER 14 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2270269	C1	20060220	RU 2005-102263	20050201
L7	ANSWER 15 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2263155	C1	20051027	RU 2004-124623	20040812
	RU 2321671	C2	20080410	RU 2005-115170	20050518
L7	ANSWER 16 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005290538	A	20051020	JP 2004-133545	20040428
L7	ANSWER 17 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1528937	A	20040915	CN 2003-10104844	20031016
	CN 1250761	C	20060412		
L7	ANSWER 18 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005007915	A1	20050127	WO 2004-JP10745	20040722
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2004258030	A1	20050127	AU 2004-258030	20040722
	AU 2004258030	B2	20080828		
	CA 2532222	A1	20050127	CA 2004-2532222	20040722
	EP 1652950	A1	20060503	EP 2004-748013	20040722
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

CN 1816639	A	20060809	CN 2004-80018799	20040722
BR 2004012746	A	20060926	BR 2004-12746	20040722
RU 2335570	C2	20081010	RU 2006-101685	20040722
NO 2006000116	A	20060220	NO 2006-116	20060106
MX 2006000764	A	20060418	MX 2006-764	20060120
US 20060174979	A1	20060810	US 2006-335676	20060120

L7	ANSWER 19 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 522813		C2	20040309	SE 2003-644	20030307
SE 2003000644		A	20040309		
WO 2004078224		A1	20040916	WO 2004-EP50265	20040305
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI			
	RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1601389		A1	20051207	EP 2004-717646	20040305
EP 1601389		B1	20060621		
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK			
CN 1758928		A	20060412	CN 2004-80006248	20040305
AT 330645		T	20060715	AT 2004-717646	20040305
JP 2006523482		T	20061019	JP 2006-505448	20040305
IN 2005KN01923		A	20060811	IN 2005-KN1923	20050927
US 20070023108		A1	20070201	US 2006-547793	20061002
L7	ANSWER 20 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040154707		A1	20040812	US 2003-706154	20031112
US 6890393		B2	20050510		
US 20040154706		A1	20040812	US 2003-431680	20030508
US 6899773		B2	20050531		
CA 2515219		A1	20040826	CA 2004-2515219	20040206
WO 2004072308		A2	20040826	WO 2004-US3876	20040206
WO 2004072308		A3	20041014		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI			
	RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1597404		A2	20051123	EP 2004-709120	20040206
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
BR 2004006958		A	20060110	BR 2004-6958	20040206
CN 1771345		A	20060510	CN 2004-80009273	20040206
JP 2006517259		T	20060720	JP 2006-501146	20040206
RU 2321670		C2	20080410	RU 2005-127861	20040206
US 20060065327		A1	20060330	US 2005-544887	20050805
MX 2005008332		A	20060525	MX 2005-8332	20050805
US 20080073005		A1	20080327	US 2007-868078	20071005
US 7470336		B2	20081230		

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	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040154706	A1	20040812	US 2003-431680	20030508
	US 6899773	B2	20050531		
	US 20040154707	A1	20040812	US 2003-706154	20031112
	US 6890393	B2	20050510		
	CA 2515219	A1	20040826	CA 2004-2515219	20040206
	WO 2004072308	A2	20040826	WO 2004-US3876	20040206
	WO 2004072308	A3	20041014		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1597404	A2	20051123	EP 2004-709120	20040206
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	BR 2004006958	A	20060110	BR 2004-6958	20040206
	CN 1771345	A	20060510	CN 2004-80009273	20040206
	JP 2006517259	T	20060720	JP 2006-501146	20040206
	US 20060065327	A1	20060330	US 2005-544887	20050805
	MX 2005008332	A	20060525	MX 2005-8332	20050805
	ZA 2005006565	A	20060726	ZA 2005-6565	20050817
	US 20080073005	A1	20080327	US 2007-868078	20071005
	US 7470336	B2	20081230		

L7	ANSWER 22 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004063400	A1	20040729	WO 2004-SE18	20040112
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ				
	SE 2003000073	A	20040714	SE 2003-73	20030113
	SE 526501	C2	20050927		
	EP 1599611	A1	20051130	EP 2004-701444	20040112
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	CN 1735698	A	20060215	CN 2004-80002102	20040112
	JP 2006518007	T	20060803	JP 2006-500745	20040112
	US 20040173288	A1	20040909	US 2004-755347	20040113

L7	ANSWER 23 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004063399	A1	20040729	WO 2004-SE17	20040112
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ				
	SE 2003000074	A	20040714	SE 2003-74	20030113
	SE 526481	C2	20050920		
	EP 1601800	A1	20051207	EP 2004-701450	20040112
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	CN 1735699	A	20060215	CN 2004-80002159	20040112
	JP 2006516677	T	20060706	JP 2006-500744	20040112
	US 20040197581	A1	20041007	US 2004-755349	20040113

US 7270719

B2 20070918

L7	ANSWER 24 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004149833	A	20040527	JP 2002-314639	20021029	
JP 4025171	B2	20071219			
JP 2007277727	A	20071025	JP 2007-149845	20070606	
L7	ANSWER 25 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10251413	B3	20040325	DE 2002-10251413	20021101	
WO 2004040032	A1	20040513	WO 2003-EP50743	20031022	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
AU 2003301678	A1	20040525	AU 2003-301678	20031022	
EP 1558777	A1	20050803	EP 2003-809760	20031022	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
CN 1708599	A	20051214	CN 2003-80102118	20031022	
US 20070000576	A1	20070104	US 2006-533295	20060913	
L7	ANSWER 26 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004005572	A1	20040115	WO 2003-SE1159	20030702	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
SE 2002002107	A	20040226	SE 2002-2107	20020703	
SE 525291	C2	20050125			
AU 2003245216	A1	20040123	AU 2003-245216	20030702	
EP 1518002	A1	20050330	EP 2003-738843	20030702	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
JP 2005531694	T	20051020	JP 2004-519462	20030702	
IN 2004KN01968	A	20060721	IN 2004-KN1968	20041221	
US 20060102253	A1	20060518	US 2005-519711	20051212	
L7	ANSWER 27 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003268504	A	20030925	JP 2002-67967	20020313	
JP 3973456	B2	20070912			
JP 2007224425	A	20070906	JP 2007-131652	20070517	

	ANSWER 28 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	JP 2003231950 JP 3716980	A B2	20030819 20051116	JP 2002-30412	20020207
L7	ANSWER 29 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	JP 2003073782	A	20030312	JP 2001-262782	20010831
L7	ANSWER 30 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	JP 2003041350	A	20030213	JP 2001-233502	20010801
L7	ANSWER 31 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	JP 2003003242	A	20030108	JP 2001-187798	20010621
L7	ANSWER 32 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	JP 2002332548	A	20021122	JP 2001-139575	20010510
L7	ANSWER 33 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	US 6475307 SE 9904182 SE 518600 CN 1142312 ES 2241672 IN 2002KN00612	B1 A C2 C T3 A	20021105 20010518 20021029 20040317 20051101 20040228	US 2000-713021 SE 1999-4182 CN 2000-815866 ES 2000-978167 IN 2002-KN612	20001116 19991117 20001114 20001114 20020506
L7	ANSWER 34 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	JP 2002317251	A	20021031	JP 2001-120851	20010419
L7	ANSWER 35 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	WO 2002078949 W: CA, KR, US RW: AT, BE, CH, PT, SE, TR JP 2002120323 JP 4132729 CA 2442748 JP 2003003278 JP 2003027256 EP 1378345 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR US 20040121162	A1 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR A B2 A1 A A A1 A1 A1 A1 A1 A1 A1 A1	20021010 20020423 20080813 20021010 20030108 20030129 20040107 2001-176681 CA 2002-2442748 JP 2002-93774 JP 2002-93773 EP 2002-707265 JP 2001-176681 CA 2002-2442748 JP 2002-93774 JP 2002-93773 EP 2002-707265 US 2003-473957	JP 2002-93774 JP 2002-93773 EP 2002-707265 US 2003-473957	20020329 20020329 20020329 20020329 20010612 20020329 20020329 20020329 20020329 20030930
L7	ANSWER 36 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT 2009 ACS on STN DATE	APPLICATION NO.	DATE
PI	DE 10110384	A1	20020919	DE 2001-10110384	20010303

WO 2002070166	A1	20020912	WO 2002-EP2167	20020228
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002246101	A1	20020919	AU 2002-246101	20020228
EP 1368144	A1	20031210	EP 2002-714176	20020228
EP 1368144	B1	20041013		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
AT 279277	T	20041015	AT 2002-714176	20020228

L7	ANSWER 37 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	JP 2002241902	A	20020828	JP 2001-33607
	JP 3642030	B2	20050427	
L7	ANSWER 38 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	JP 2002194506	A	20020710	JP 2000-392321
L7	ANSWER 39 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	JP 2002173741	A	20020621	JP 2000-368533
L7	ANSWER 40 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	JP 2002173740	A	20020621	JP 2000-368532
L7	ANSWER 41 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	JP 2002146483	A	20020522	JP 2000-342572
	WO 2003095693	A1	20031120	WO 2002-JP4493
	W: CN, JP, KR			
	CN 1526032	A	20040901	CN 2002-813737
	CN 1263880	C	20060712	
	TW 246538	B	20060101	TW 2002-91109618
	JP 4212553	B2	20090121	JP 2004-503681
	HK 1069190	A1	20061222	HK 2005-101661
L7	ANSWER 42 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	JP 2002129291	A	20020509	JP 2000-329984
L7	ANSWER 43 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.
PI	EP 1186351	A1	20020313	EP 2001-119050
	EP 1186351	B1	20060104	
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,			

IE, SI, LT, LV, FI, RO				
		CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
CA 2354665		A1	20020209	CA 2001-2354665
CA 2354665		C	20061031	20010803
US 20020098367		A1	20020725	US 2001-924737
US 6730407		B2	20040504	20010808
KR 782588		B1	20071212	KR 2001-47753
L7 ANSWER 44 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
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PI JP 2001226749		A	20010821	JP 2000-35526
JP 3503560		B2	20040308	20000214
L7 ANSWER 45 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
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PI JP 2001179485		A	20010703	JP 1999-370129
19991227				
L7 ANSWER 46 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
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PI WO 2001036699		A1	20010525	WO 2000-SE2239
W: BR, CA, CN, IN, JP, KR, MX, RU, SE				20001114
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,				
PT, SE, TR				
SE 9904182		A	20010518	SE 1999-4182
SE 518600		C2	20021029	19991117
CA 2389281		A1	20010525	CA 2000-2389281
CA 2389281		C	20081230	20001114
BR 2000015548		A	20020709	BR 2000-15548
EP 1230411		A1	20020814	EP 2000-978167
EP 1230411		B1	20050518	20001114
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, FI, CY, TR				
JP 2003514990		T	20030422	JP 2001-538574
AT 295905		T	20050615	AT 2000-978167
ES 2241672		T3	20051101	ES 2000-978167
IN 2002KN00612		A	20040228	IN 2002-KN612
20020506				
L7 ANSWER 47 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
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PI JP 2001123248		A	20010508	JP 1999-301083
JP 3606135		B2	20050105	19991022
L7 ANSWER 48 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
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PI JP 2001081535		A	20010327	JP 1999-261944
JP 4173609		B2	20081029	19990916
L7 ANSWER 49 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
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PI JP 2000303150		A	20001031	JP 1999-111241
19990419				
L7 ANSWER 50 OF 124	PATENT NO.	CAPLUS	COPYRIGHT 2009 ACS on STN	
		KIND	DATE	APPLICATION NO.
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PI EP 1046723		A1	20001025	EP 2000-401066
EP 1046723		B1	20040414	20000417
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, SI, LT, LV, FI, RO					
	JP 2000303151	A	20001031	JP 1999-111446	19990419
JP 3397168	B2	20030414			
JP 2000309854	A	20001107	JP 1999-115461	19990422	
JP 3397169	B2	20030414			
JP 2000328200	A	20001128	JP 1999-133218	19990513	
JP 2000328205	A	20001128	JP 1999-144065	19990524	
JP 2001032056	A	20010206	JP 1999-208278	19990722	
CN 1271027	A	20001025	CN 2000-105765	20000406	
CN 1117882	C	20030813			
US 6379476	B1	20020430	US 2000-548673	20000413	
CA 2305839	A1	20001019	CA 2000-2305839	20000414	
CA 2305839	C	20030617			
AT 264409	T	20040415	AT 2000-401066	20000417	
ES 2218081	T3	20041116	ES 2000-401066	20000417	
JP 2003193206	A	20030709	JP 2002-350456	20021202	
JP 4078966	B2	20080423			
L7	ANSWER 51 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	EP 1008666	A1	20000614	EP 1999-309869	19991208
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO				
	JP 2001123249	A	20010508	JP 1999-334479	19991125
	JP 3760704	B2	20060329		
	US 6440234	B1	20020827	US 1999-453714	19991203
	CA 2291857	A1	20000608	CA 1999-2291857	19991206
	CA 2291857	C	20040601		
	AU 9963166	A	20000629	AU 1999-63166	19991206
	AU 732550	B2	20010426		
	NO 9906015	A	20000609	NO 1999-6015	19991207
L7	ANSWER 52 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
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PI	JP 2000144339	A	20000526	JP 1998-320261	19981111
	JP 3736721	B2	20060118		
L7	ANSWER 53 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	EP 937782	A2	19990825	EP 1999-400423	19990222
	EP 937782	A3	19991117		
	EP 937782	B1	20030521		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO				
	JP 11302802	A	19991102	JP 1998-368608	19981225
	JP 2996245	B2	19991227		
	US 6210806	B1	20010403	US 1999-253140	19990219
	CA 2262288	A1	19990823	CA 1999-2262288	19990222
	CA 2262288	C	20050510		
	NO 9900824	A	19990824	NO 1999-824	19990222
L7	ANSWER 54 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
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PI	JP 11236654	A	19990831	JP 1998-43896	19980225
L7	ANSWER 55 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 11172379 JP 3229577	A B2	19990629 20011119	JP 1997-337140	19971208
L7	ANSWER 56 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	EP 919638 EP 919638 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO US 6037287 CA 2254700 CA 2254700 AU 9894143 JP 11229103 JP 3502281 BR 9805058 AT 218168 ES 2174378	A1 B1 A A1 C A A B2 A T T3	19990602 20020529 20000314 19990526 20020122 19990617 19990824 20040302 19991116 20020615 20021101	EP 1998-122395 US 1997-978738 CA 1998-2254700 AU 1998-94143 JP 1998-333982 BR 1998-5058 AT 1998-122395 ES 1998-122395	19981125 19971126 19981125 19981125 19981125 19981125 19981125 19981125 19981125
L7	ANSWER 57 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	WO 9813530 W: DE, KR, SE, US JP 10102210 JP 10330890 JP 3224210 JP 11001785 JP 3152631 DE 19781031 TW 383340 SE 9801735 SE 519722	A1 A A B2 A B2 T0 B A C2	19980402 19980421 19981215 20011029 19990106 20010403 19981217 20000301 19980710 20030401	WO 1997-JP3439 JP 1996-256333 JP 1997-148210 JP 1997-149265 DE 1997-19781031 TW 1997-86114138 SE 1998-1735	19970926 19960927 19970605 19970606 19970926 19970927 19980518
L7	ANSWER 58 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	JP 10085803 JP 3175920	A B2	19980407 20010611	JP 1996-263517	19960911
L7	ANSWER 59 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	JP 09249947	A	19970922	JP 1996-84821	19960313
L7	ANSWER 60 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	JP 08109444	A	19960430	JP 1994-244443	19941007
L7	ANSWER 61 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	JP 08035009	A	19960206	JP 1994-167237	19940719
L7	ANSWER 62 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE 2009 ACS on STN APPLICATION NO.	DATE	
PI	RU 2009263	C1	19940315	RU 1992-5035023	19920331
L7	ANSWER 63 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2009262	C1	19940315	RU 1992-5063364	19920924
L7	ANSWER 64 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	RU 2024643	C1	19941215	RU 1990-4882908	19901120
L7	ANSWER 65 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 07011391	A	19950113	JP 1993-157464	19930628
L7	ANSWER 66 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 06299301 JP 2962098	A B2	19941025 19991012	JP 1993-106029	19930409
L7	ANSWER 67 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	FR 2700174 FR 2700174	A1 B1	19940708 19951027	FR 1993-204	19930107
L7	ANSWER 68 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 06128632	A	19940510	JP 1992-274622	19921013
L7	ANSWER 69 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 06128627	A	19940510	JP 1992-274623	19921013
L7	ANSWER 70 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 06128694	A	19940510	JP 1992-274621	19921013
L7	ANSWER 71 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 06136490	A	19940517	JP 1992-291830	19921029
L7	ANSWER 72 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 05255736	A	19931005	JP 1992-5133	19920114
L7	ANSWER 73 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 05112850 JP 08030253	A B	19930507 19960327	JP 1991-97693	19910426
L7	ANSWER 74 OF 124 PATENT NO.	CAPLUS KIND	COPYRIGHT DATE	2009 ACS on STN APPLICATION NO.	DATE
PI	JP 04268018	A	19920924	JP 1991-28960	19910222

	L7	ANSWER 75 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN	
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 343008	A2	19891123	EP 1989-305108	19890519
	EP 343008	A3	19900207		
	EP 343008	B1	19950816		
	R: AT, BE, DE, ES, FR, GB, IT, NL, SE				
	US 4986857	A	19910122	US 1989-351435	19890512
	ZA 8903607	A	19900131	ZA 1989-3607	19890515
	CA 1316438	C	19930420	CA 1989-599727	19890515
	IN 175707	A1	19950819	IN 1989-DE422	19890515
	AU 8934941	A	19900531	AU 1989-34941	19890517
	AU 611560	B2	19910613		
	FI 8902396	A	19891120	FI 1989-2396	19890518
	BR 8902345	A	19900109	BR 1989-2345	19890519
	JP 02236225	A	19900919	JP 1989-127715	19890519
	JP 07065099	B	19950712		
L7	ANSWER 76 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	SU 1475969	A1	19890430	SU 1987-4338452	19870727
L7	ANSWER 77 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
L7	ANSWER 78 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
L7	ANSWER 79 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	JP 61114415	A	19860602	JP 1984-235674	19841108
	JP 04074115	B	19921125		
L7	ANSWER 80 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	JP 61106747	A	19860524	JP 1984-228592	19841029
L7	ANSWER 81 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	EP 178334	A1	19860423	EP 1984-112233	19841011
	EP 178334	B1	19900718		
	R: DE, FR				
	CA 1249737	A1	19890207	CA 1984-465469	19841015
	CA 1212850	A1	19861021	CA 1984-469349	19841205
	US 5939018	A	19990817	US 1996-757681	19961129
L7	ANSWER 82 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	JP 61000565	A	19860106	JP 1984-120935	19840612
	JP 62047943	B	19871012		
L7	ANSWER 83 OF 124	CAPLUS	COPYRIGHT 2009 ACS on STN		
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	JP 60211054	A	19851023	JP 1984-65245	19840403
	JP 01004580	B	19890126		
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PATENT NO.					
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PI	JP 58006792	A	19830114	JP 1981-104139	19810703
L7	ANSWER 86 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
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PI	US 4314863	A	19820209	US 1979-89980	19791031
L7	ANSWER 87 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
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PI	FR 2478675	A1	19810925	FR 1981-5428	19810318
FR 2478675	B1	19850208			
JP 56130459	A	19811013	JP 1980-34138	19800319	
JP 59035412	B	19840828			
GB 2072701	A	19811007	GB 1981-7495	19810310	
GB 2072701	B	19840125			
DE 3109796	A1	19811224	DE 1981-3109796	19810313	
DE 3109796	C2	19861016			
US 4378246	A	19830329	US 1981-244292	19810316	
SE 8101739	A	19810920	SE 1981-1739	19810318	
SE 440919	B	19850826			
SE 440919	C	19930722			
AT 8101294	A	19840115	AT 1981-1294	19810319	
AT 375682	B	19840827			
L7	ANSWER 88 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
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PI	JP 56081660	A	19810703	JP 1979-156383	19791204
JP 60056221	B	19851209			
L7	ANSWER 89 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
L7	ANSWER 90 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
L7	ANSWER 91 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
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PI	SU 535371	A1	19761115	SU 1975-2094946	19750108
L7	ANSWER 92 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
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PI	SU 429132	A1	19740525	SU 1970-1483320	19701002
L7	ANSWER 93 OF 124	CAPLUS	COPYRIGHT	2009 ACS on STN	
PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
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PI	JP 47040605	B4	19721014	JP 1967-66793	19671016
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PI US 20080240970 A1 20081002

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PI US 20080073005 A1 20080327  
US 7470336 B2 20081230

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PI US 20070023108 A1 20070201

L7 ANSWER 101 OF 124 USPATFULL on STN  
PI US 20070000576 A1 20070104

L7 ANSWER 102 OF 124 USPATFULL on STN  
PI US 20060255026 A1 20061116

L7 ANSWER 103 OF 124 USPATFULL on STN  
PI US 20060174979 A1 20060810

L7 ANSWER 104 OF 124 USPATFULL on STN  
PI US 20060102253 A1 20060518

L7 ANSWER 105 OF 124 USPATFULL on STN  
PI US 20060065327 A1 20060330

L7 ANSWER 106 OF 124 USPATFULL on STN  
PI US 20040232131 A1 20041125  
US 7091448 B2 20060815

L7 ANSWER 107 OF 124 USPATFULL on STN  
PI US 20040197581 A1 20041007  
US 7270719 B2 20070918

L7 ANSWER 108 OF 124 USPATFULL on STN  
PI US 20040173288 A1 20040909

L7 ANSWER 109 OF 124 USPATFULL on STN  
PI US 20040154707 A1 20040812  
US 6890393 B2 20050510

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PI US 20040154706 A1 20040812  
US 6899773 B2 20050531

L7 ANSWER 111 OF 124 USPATFULL on STN  
PI US 20040121162 A1 20040624

L7 ANSWER 112 OF 124 USPATFULL on STN  
PI US 20030062511 A1 20030403  
US 6733694 B2 20040511

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PI US 6475307 B1 20021105

L7 ANSWER 114 OF 124 USPATFULL on STN  
PI US 20020153364 A1 20021024  
US 6784401 B2 20040831

L7 ANSWER 115 OF 124 USPATFULL on STN  
PI US 6440234 B1 20020827

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PI US 20020098367 A1 20020725

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B2 20040504

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PI US 6379476 B1 20020430

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PI US 6210806 B1 20010403

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PI US 6037287 20000314

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PI US 5939018 19990817

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PI US 4986857 19910122

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PI US 4810591 19890307

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32 FILE CAPLUS  
7 FILE CERAB

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=> e miyata yukio/au,in  
'IN' IS NOT A VALID EXPAND FIELD CODE FOR FILE 'SCISEARCH'  
E1 10 MIYATA YUKINORI/AU  
E2 10 MIYATA YUKINORI/IN  
E3 106 --> MIYATA YUKIO/AU  
E4 82 MIYATA YUKIO/IN  
E5 1 MIYATA YUKIO C O CHITA WORKS/AU  
E6 1 MIYATA YUKIO C O CHITA WORKS/IN  
E7 1 MIYATA YUKIO C O I P DEPT JFE STEEL CORP/AU  
E8 1 MIYATA YUKIO C O I P DEPT JFE STEEL CORP/IN  
E9 1 MIYATA YUKIO C O INTELLECTUAL PROPERTY DEPT/AU  
E10 1 MIYATA YUKIO C O INTELLECTUAL PROPERTY DEPT/IN  
E11 1 MIYATA YUKIO C O IPD JFE STEEL CORPORATION/AU  
E12 1 MIYATA YUKIO C O IPD JFE STEEL CORPORATION/IN  
The indicated field code is not available for EXPAND in this  
file. To see a list of valid EXPAND field codes, enter HELP  
SFIELDS at an arrow prompt (=>).

=> d more  
'MORE' IS NOT A VALID FORMAT  
In a multifile environment, a format can only be used if it is valid  
in at least one of the files. Refer to file specific help messages  
or the STNGUIDE file for information on formats available in  
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REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):ignore  
'IGNORE' IS NOT A VALID FORMAT  
In a multifile environment, a format can only be used if it is valid  
in at least one of the files. Refer to file specific help messages  
or the STNGUIDE file for information on formats available in  
individual files.

REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):exit

'EXIT' IS NOT A VALID FORMAT

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REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):break

'BREAK' IS NOT A VALID FORMAT

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REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):ibib

L8 ANSWER 1 OF 58 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2009:175431 CAPLUS  
DOCUMENT NUMBER: 150:196407  
TITLE: Austenitic stainless steel sheets for structural members with excellent impact absorption  
INVENTOR(S): Hamada, Junichi; Hatano, Masaharu; Takahashi, Akihiko; Kajimura, Haruhiko  
PATENT ASSIGNEE(S): Nippon Steel & Sumikin Stainless Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 12pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2009030128	A	20090212	JP 2007-196829	20070730
PRIORITY APPLN. INFO.:			JP 2007-196829	20070730

=> help sfields

GENERAL HELP FOR 'SFIELDS' IS NOT AVAILABLE

CAPLUS  
INSPEC  
SCISEARCH  
EPFULL  
GBFULL  
USPATFULL  
USPATOLD  
USPAT2

ENTER A FILE NAME OR (END):caplus

The searchable fields in the CAplus File are listed below. If you do not specify a field, your term will be searched in the Basic Index, which contains single words from document title, supplementary term, index term, and abstract fields, as well as CAS Registry Numbers(R). Fields that allow left truncation and SLART (/BI, /AB, /TI, /IT, and /ST) are indicated by an asterisk (\*).

#### General Search Fields

Definition	Search Code
Basic Index *	/BI (or /IA)
Abstract *	/AB
Accession Number	/AN
Author	/AU

CA Section Cross-references	/SX
Classification Code (CA Section)	/CC
Company Name thesaurus search aid	/CO
Controlled Term	/CT
Controlled Word	/CW
Corporate Source	/CS
	/CYA
Document Number	/DN
Document Type	/DT
Entry Date	/ED
Field Availability	/FA
File Segment	/FS
Index Term *	/IT
International Standard (Document) Number	/ISN
Issue Number of Publication	/IS
Journal Title	/JT
Language	/LA
Original Reference Number	/OREF
Other Source	/OS
Publication Date	/PD
Publication Year	/PY
Publisher	/PB
Publisher Item Identifier	/PUI
Role	/RL
Source	/SO
Supplementary Term *	/ST
Title *	/TI
Uniform Resource Locator	/URL
Update Date	/UP
Update Date, CA Abstract Number and Indexing	/UPI
Volume and Issue of CA	/VI
Volume Number of Publication	/VL

#### Patent Search Fields

Definition	Search Code
Country Number Count	/CYC
Designated States	/DS
Designated States, Basic	/DS.B
European Classifications	/ECLA
Family Accession Number	/FAN
Family Accession Number Count	/FAN.CNT
File Forming Terms for Japanese Patents	/FTERM
International Patent Classification, All (1)	/IPC
International Patent Classification, Basic Patent	/IPC.B
International Patent Classification, Action Date	/IPC.ACD
International Patent Classification, Initial Classification	/IPCI
International Patent Classification, Keywords	/IPC.KW
International Patent Classification, Reclassification	/IPCR
International Patent Classification, Version	/IPC.VER
International Patent Classification, Main and Secondary (2)	/IC
International Patent Classification, Additional or Supplementary (2)	/ICA
International Patent Classification,	/ICI

Index or Complementary (2)		
International Patent Classification, Main (2)	/ICM	
International Patent Classification, Main Group, Range Searchable (2)	/MGR	
International Patent Classification, Secondary (2)	/ICS	
International Patent Classification, Subgroup, Range Searchable (2)	/SGR	
Inventor Name	/IN	
National Patent Classification, Current	/NCL	
National Patent Classification, Issued	/INCL	
National Patent Classification, Issued Range Searchable	/NCLR	
Patent Application Country	/AC	
Patent Application Country, Basic	/AC.B	
Patent Application Date	/AD	
Patent Application Date, Basic	/AD.B	
Patent Application Number	/AP	
Patent Application Number, Basic	/AP.B	
Patent Application Year	/AY	
Patent Application Year, Basic	/AY.B	
Patent Assignee	/PA	
Patent Country	/PC	
Patent Country, Basic	/PC.B	
Patent Kind Code	/PK	
Patent Kind Code, Basic	/PK.B	
Patent Number	/PN	
Patent Number, Basic	/PN.B	
Patent Number Count	/PNC	
Priority Application Country	/PRC	
Priority Application Country, Basic	/PRC.B	
Priority Application Date	/PRD	
Priority Application Date, Basic	/PRD.B	
Priority Application Number (3)	/PRN	
Priority Application Number, Basic	/PRN.B	
Priority Application Year	/PRY	
Priority Application Year, Basic	/PRY.B	
Publication Date (Patent, Basic)	/PD.B	
Publication Year (Patent, Basic)	/PY.B	
Update Date Patent Family	/UPP	

- (1) This field contains all IPCs (pre-IPC Reform and post-IPC Reform) for the basic patents and family members. A thesaurus is available in this field.
- (2) This field contains the IPCs only for the basic patents published with pre-IPC Reform codes. This field will not be updated with the IPC Reform codes. Use the /IPC field to search all IPCs (pre-IPC Reform and post-IPC Reform) for the basic patent documents and family members.
- (3) US provisional priority numbers are searched only with a P appended, e.g., US1999-121903P/PRN.

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Search Field Name	Super Search Code	Fields Searched
IPC, Old	/IPC.OLD	/IC,/ICA,/ICI
Patent Application and Priority Number	/APPS	/AP,/PRN

Patent Application and Priority Number, Basic	/APPS.B	/AP.B, /PRN.B
Patent Countries	/PCS	/PC, /DS
Patent Countries, Basic	/PCS.B	/PC.B, /DS.B
Patent Numbers	/PATS	/PN
Patent Numbers, Basic	/PATS.B	/PN.B

#### Cited References Search Fields

Definition	Search Code
Cited Reference	/RE
Cited Reference Accession Number in CAPLUS	/RAN.CAPLUS
Cited Reference Accession Number in MEDLINE	/RAN.MED
Cited Reference Author Name	/RAU
Cited Reference File Availability	/FILE.CIT
Cited Reference Inventor Name	/RIN
Cited Reference Page Number (first)	/RPG
Cited Reference Patent Country Code	/RPC
Cited Reference Patent Kind Code	/RPK
Cited Reference Patent Number	/RPN
Cited Reference Publication Year	/RPY
Cited Reference Series Issue Number	/RIS
Cited Reference Series Volume Number	/RVL
Cited Reference Source Information (contains year, volume, issue, page, and publication title)	/RSO
Cited Reference Work (Publication Title)	/RWK
Citing Document Reference Count	/RE.CNT (/REC)

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Search and display fields generally have the same field codes. To see a list of display fields, enter HELP DFIELDS at an arrow prompt (=>).

```
=> s e3-e12
'IN' IS NOT A VALID FIELD CODE
L9      110 ("MIYATA YUKIO"/AU OR "MIYATA YUKIO"/IN OR "MIYATA YUKIO C O
          CHITA WORKS"/AU OR "MIYATA YUKIO C O CHITA WORKS"/IN OR "MIYATA
          YUKIO C O I P DEPT JFE STEEL CORP"/AU OR "MIYATA YUKIO C O I P
          DEPT JFE STEEL CORP"/IN OR "MIYATA YUKIO C O INTELLECTUAL PROPER
          TY DEPT"/AU OR "MIYATA YUKIO C O INTELLECTUAL PROPERTY DEPT"/IN
          OR "MIYATA YUKIO C O IPD JFE STEEL CORPORATION"/AU OR "MIYATA
          YUKIO C O IPD JFE STEEL CORPORATION"/IN)
```

```
=> e kimura mitsuo/au,in
'IN' IS NOT A VALID EXPAND FIELD CODE FOR FILE 'SCISEARCH'
E1      26      KIMURA MITSUNORI/AU
E2      20      KIMURA MITSUNORI/IN
E3      374 --> KIMURA MITSUO/AU
E4      234      KIMURA MITSUO/IN
E5      1      KIMURA MITSUO C O CANON KABUSHIKI KAISHA/AU
E6      1      KIMURA MITSUO C O CANON KABUSHIKI KAISHA/IN
E7      1      KIMURA MITSUO C O CHITA WORKS/AU
E8      1      KIMURA MITSUO C O CHITA WORKS/IN
E9      1      KIMURA MITSUO C O I P DEPT JFE STEEL CORP/AU
E10     1      KIMURA MITSUO C O I P DEPT JFE STEEL CORP/IN
E11     3      KIMURA MITSUO C O INTELLECTUAL PROPERTY DEPT/AU
E12     3      KIMURA MITSUO C O INTELLECTUAL PROPERTY DEPT/IN
```

The indicated field code is not available for EXPAND in this file. To see a list of valid EXPAND field codes, enter HELP SFIELDS at an arrow prompt (=>).

```
=> s e3-e12
'IN' IS NOT A VALID FIELD CODE
L10     380 ("KIMURA MITSUO"/AU OR "KIMURA MITSUO"/IN OR "KIMURA MITSUO C O
          CANON KABUSHIKI KAISHA"/AU OR "KIMURA MITSUO C O CANON KABUSHIKI
          KAISHA"/IN OR "KIMURA MITSUO C O CHITA WORKS"/AU OR "KIMURA
          MITSUO C O CHITA WORKS"/IN OR "KIMURA MITSUO C O I P DEPT JFE
          STEEL CORP"/AU OR "KIMURA MITSUO C O I P DEPT JFE STEEL CORP"/IN
          OR "KIMURA MITSUO C O INTELLECTUAL PROPERTY DEPT"/AU OR "KIMURA
          MITSUO C O INTELLECTUAL PROPERTY DEPT"/IN)
```

```
=> e itakura noritsugu/au,in  
'IN' IS NOT A VALID EXPAND FIELD CODE FOR FILE 'SCISEARCH'  
E1      1      ITAKURA NORIHIKO/IN  
E2      3      ITAKURA NORIO/AU  
E3      42 --> ITAKURA NORITSUGU/AU  
E4      36      ITAKURA NORITSUGU/IN  
E5      1      ITAKURA NORITSUGU C O KAWASAKI STEEL CO/AU  
E6      1      ITAKURA NORITSUGU C O KAWASAKI STEEL CO/IN  
E7      1      ITAKURA NORITSUGU C O TECH RES LAB KAWASAKI/AU  
E8      1      ITAKURA NORITSUGU C O TECH RES LAB KAWASAKI/IN  
E9      1      ITAKURA NORITSUGU KAWASAKI STEEL CORPORATION/AU  
E10     1      ITAKURA NORITSUGU KAWASAKI STEEL CORPORATION/IN  
E11     1      ITAKURA NORIYUKI/AU  
E12     1      ITAKURA NORIYUKI/IN
```

The indicated field code is not available for EXPAND in this file. To see a list of valid EXPAND field codes, enter HELP SFIELDS at an arrow prompt (=>).

```
=> e e3-e10  
'E3-E10' IS NOT VALID HERE  
Only one term can be used with the EXPAND command at any one time.  
Enter "EXPAND" and the single E# you wish to use at the next arrow prompt (=>).  
  
=> s e3-e10  
'IN' IS NOT A VALID FIELD CODE  
L11      45 ("ITAKURA NORITSUGU"/AU OR "ITAKURA NORITSUGU"/IN OR "ITAKURA  
          NORITSUGU C O KAWASAKI STEEL CO"/AU OR "ITAKURA NORITSUGU C O  
          KAWASAKI STEEL CO"/IN OR "ITAKURA NORITSUGU C O TECH RES LAB  
          KAWASAKI"/AU OR "ITAKURA NORITSUGU C O TECH RES LAB KAWASAKI"/IN  
          OR "ITAKURA NORITSUGU KAWASAKI STEEL CORPORATION"/AU OR "ITAKUR  
          A NORITSUGU KAWASAKI STEEL CORPORATION"/IN)
```

```
=> e masamura katsumi/au,in  
'IN' IS NOT A VALID EXPAND FIELD CODE FOR FILE 'SCISEARCH'  
E1      10      MASAMURA K/IN  
E2      10      MASAMURA KATSUHIKO/AU  
E3      60 --> MASAMURA KATSUMI/AU  
E4      41      MASAMURA KATSUMI/IN  
E5      2      MASAMURA KATSUMI C O I P DEPT JFE STEEL CORP/AU  
E6      2      MASAMURA KATSUMI C O I P DEPT JFE STEEL CORP/IN  
E7      1      MASAMURA KATSUMIC O INTELLECTUAL PROPERTY DEPARTMENT/AU  
E8      1      MASAMURA KATSUMIC O INTELLECTUAL PROPERTY DEPARTMENT/IN  
E9      1      MASAMURA KATSUML/AU  
E10     2      MASAMURA KAZUHITO/AU  
E11     8      MASAMURA KENJI/AU  
E12     8      MASAMURA KENJI/IN
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The indicated field code is not available for EXPAND in this file. To see a list of valid EXPAND field codes, enter HELP SFIELDS at an arrow prompt (=>).

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=> s e3-e8  
'IN' IS NOT A VALID FIELD CODE  
L12      62 ("MASAMURA KATSUMI"/AU OR "MASAMURA KATSUMI"/IN OR "MASAMURA  
          KATSUMI C O I P DEPT JFE STEEL CORP"/AU OR "MASAMURA KATSUMI C  
          O I P DEPT JFE STEEL CORP"/IN OR "MASAMURA KATSUMIC O INTELLECTU  
          AL PROPERTY DEPARTMENT"/AU OR "MASAMURA KATSUMIC O INTELLECTUAL  
          PROPERTY DEPARTMENT"/IN)
```

```
=> s (l9 or l10 or l11 or l12)  
L13      520 (L9 OR L10 OR L11 OR L12)
```

=> s l13 and (stain-less or stainless)  
L14 98 L13 AND (STAIN-LESS OR STAINLESS)

=> s l14 and martensitic  
L15 49 L14 AND MARTENSITIC

=> s l14 and martensitic (w5) (stainless or stain-less)  
MISSING OPERATOR 'RTENSITIC (W5'  
The search profile that was entered contains terms or  
nested terms that are not separated by a logical operator.

=> s l14 and martensitic W5 (stainless or stain-less)  
MISSING OPERATOR 'W5 (STAINLESS'  
The search profile that was entered contains terms or  
nested terms that are not separated by a logical operator.

=> s l14 and martensitic and (stainless or stain-less)  
L16 49 L14 AND MARTENSITIC AND (STAINLESS OR STAIN-LESS)

=> d scan l14

L14 98 ANSWERS EPFULL COPYRIGHT 2009 EPO/FIZ KA on STN  
TIEN HIGH STRENGTH STAINLESS STEEL PIPE EXCELLENT IN CORROSION  
RESISTANCE FOR USE IN OIL WELL AND METHOD FOR PRODUCTION THEREOF.  
TIFR TUYAU EN ACIER INOXYDABLE A HAUTE RESISTANCE A LA CORROSION UTILISE DANS  
UN PUITS DE PETROLE ET PROCEDE DE PRODUCTION CORRESPONDANT.  
TIDE ROHR AUS HOCHFESTEM NICHTROSTENDEM STAHL MIT HERVORRAGENDER  
KORROSIONSBESTAENDIGKEIT ZUR VERWENDUNG IN ERDOELBOHRLÖECHERN UND  
HERSTELLUNGSVERFAHREN DAFÜER.

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> s l14 and (tube or pipe or tubular or seamless)  
L17 71 L14 AND (TUBE OR PIPE OR TUBULAR OR SEAMLESS)

=> d scan l17

L17 71 ANSWERS CAPLUS COPYRIGHT 2009 ACS on STN  
IC ICM C21D008-10  
ICS C22C038-18  
CC 55-11 (Ferrous Metals and Alloys)  
TI Martensitic stainless steel for manufacture of seamless  
pipe having high strength and cold toughness  
ST stainless steel martensitic seamless pipe  
cold toughness  
IT Pipes and Tubes  
(seamless; martensitic stainless steel for manufacture  
of seamless pipes having cold toughness)  
IT Cast alloys  
RL: DEV (Device component use); USES (Uses)  
(stainless steel, ingot, for seamless pipes  
; martensitic stainless steel for manufacture of seamless  
pipes having cold toughness)  
IT 499993-35-0  
RL: TEM (Technical or engineered material use); USES (Uses)  
(alloying of; martensitic stainless steel for manufacture of  
seamless pipes having cold toughness)  
IT 86173-60-6 163849-47-6 177159-49-8 499993-36-1  
RL: TEM (Technical or engineered material use); USES (Uses)  
(microalloyed, for pipes; martensitic stainless  
steel for manufacture of seamless pipes having cold

toughness)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

=> d 117 1

L17 ANSWER 1 OF 71 CAPLUS COPYRIGHT 2009 ACS on STN  
AN 2009:25186 CAPLUS  
DN 150:81362  
TI Martensitic stainless steel seamless pipe  
for oil well pipe and process for producing the same  
IN Miyata, Yukio; Kimura, Mitsuo; Tanaka, Masahito;  
Shimamoto, Ken  
PA JFE Steel Corporation, Japan  
SO PCT Int. Appl., 23pp.  
CODEN: PIXXD2  
DT Patent  
LA Japanese  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2009004741	A1	20090108	WO 2007-JP70209	20071010
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2009007658	A	20090115	JP 2007-172560	20070629
PRAI JP 2007-172560	A	20070629		
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT				

=> s 117 and (martensite or martensitic)  
L18 54 L17 AND (MARTENSITE OR MARTENSITIC)

=> d 118 1-54 ibib,abs

L18 ANSWER 1 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2009:25186 CAPLUS  
DOCUMENT NUMBER: 150:81362  
TITLE: Martensitic stainless steel  
seamless pipe for oil well  
pipe and process for producing the same  
INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Tanaka, Masahito; Shimamoto, Ken  
PATENT ASSIGNEE(S): JFE Steel Corporation, Japan  
SOURCE: PCT Int. Appl., 23pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2009004741	A1	20090108	WO 2007-JP70209	20071010
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2009007658	A	20090115	JP 2007-172560	20070629
PRIORITY APPLN. INFO.:			JP 2007-172560	A 20070629

AB Disclosed are a seamless steel pipe for oil well pipes which combines a high yield strength of a 110-ksi class with excellent low-temperature toughness, and a process for producing the seamless steel pipe. A stainless-steel seamless pipe having a composition containing, in terms of mass%, C <0.010, Si up to 1.0, Mn 0.1-2.0, P up to 0.020, S up to 0.010, Al up to 0.10, Cr 10-14, Ni 0.1-4.0, and N up to 0.05, the remainder being Fe and incidental impurities, is subjected to a quenching treatment in which the pipe is heated to a hardening temperature not lower than transformation point Ac<sub>3</sub> and then cooled to a temperature of 100° or lower at a cooling rate higher than in air cooling. Subsequently to the quenching treatment, the pipe is subjected to a tempering treatment in which it is heated to a tempering temperature of 450-550°, excluding 450°, and then cooled. Thus, a martensitic stainless steel seamless pipe for oil well pipes was obtained which combines a high yield strength of a 110-ksi class with excellent low-temperature toughness, i.e., a vTrs of -60° or lower. The composition may further contain one or more members selected among Cu, Mo, V, Nb, and Ti.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 2 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2008:1481831 CAPLUS  
 DOCUMENT NUMBER: 150:22779  
 TITLE: Expansible stainless steel pipes for oil wells and method for their manufacture  
 INVENTOR(S): Kimura, Mitsuo; Tanaka, Masahito  
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008297602	A	20081211	JP 2007-144977	20070531
PRIORITY APPLN. INFO.:			JP 2007-144977	20070531

AB The title oil well pipes have yield strength  $\geq 350$  MPa, n value  $\geq 0.08$ , u-El (uniform elongation: %) satisfying  $n > 0.007 + (25 - u-El)$ , CO<sub>2</sub> corrosion resistance, and expansibility and are expanded after their placing in oil wells. Preferably, the pipe steels consist of C  $\leq 0.25$ , Si  $\leq 1.0$ , Mn 0.10-2.50, P  $\leq 0.05$ , S  $\leq 0.005$ , Al  $\leq 0.05$ , Cr 11.5-18.0, N  $\leq 0.09$  weight%, and balance Fe. The pipe steels may

optionally contain (A) Cu ≤3.5, (B) Ni ≤7.0, Mo ≤3.0, V ≤0.20, and/or Nb ≤0.20, (C) Ti ≤0.3, Zr ≤0.2, B ≤0.01, and/or W ≤3.0, and/or (D) Ca 0.0005-0.01 weight%. Method for manufacture of the claimed pipes from steels having the above given chemical composition includes quenching and tempering steps or a tempering step during their heat treatment.

L18 ANSWER 3 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2008:1009497 CAPLUS  
 DOCUMENT NUMBER: 149:272239  
 TITLE: Manufacture of thick-wall martensitic 13Cr stainless steel pipe  
 INVENTOR(S): Miyata, Yukio; Tanaka, Masahito; Shoji, Masaaki  
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008189945	A	20080821	JP 2007-22087	20070131
PRIORITY APPLN. INFO.:			JP 2007-22087	20070131

AB The pipe is manufactured by heating a steel pipe containing C 0.15-0.22, Si ≤1.0, Mn ≤1.0, P ≤0.020, S ≤0.010, and Cr 12-14 weight% at ≥930°, quenching at cooling rate CR to ≤100°, and tempering to ≤Acl transformation point while satisfying T ≥2.5 + CR + 1015 [T = heating temperature (°) in quenching; CR = average cooling rate (°/min) at 700-600°]. The pipe has high yield strength and toughness.

L18 ANSWER 4 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2008:281399 CAPLUS  
 DOCUMENT NUMBER: 148:289176  
 TITLE: Stainless steel pipe showing excellent pipe expandability for oil wells  
 INVENTOR(S): Kimura, Mitsuo; Tanaka, Masahito  
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008050646	A	20080306	JP 2006-227239	20060824
PRIORITY APPLN. INFO.:			JP 2006-227239	20060824

AB The stainless steel pipe contains C ≤0.05, Si ≤0.50, Mn 0.10-1.80, P ≤0.03, S ≤0.005, Cr 14.5-19.0, Ni 1.5-7.0, V ≤0.20, N ≤0.15, and O ≤0.008 weight% and has tempered martensite phase (Pm) and austenite phase (Pa) at volume ratio of Pa/Pm ≥1/4, ≥10 and <50 volume% ferrite phase, and yield strength <654 MPa. Optionally, the stainless steel pipe contains Nb ≤0.20, Ca 0.0005-0.01, Cu ≤3.5, Ti ≤0.3, Zr ≤0.2, B ≤0.01, W ≤3.0, and/or Al ≤0.05 weight%. The stainless steel pipe provides

high corrosion resistance and expandability.

L18 ANSWER 5 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2007:1469101 CAPLUS  
DOCUMENT NUMBER: 148:82773  
TITLE: Ultra-high strength and corrosion-resistant stainless steel pipes for use in oil wells and method for their manufacture  
INVENTOR(S): Kimura, Mitsuo; Shimamoto, Takeshi  
PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007332442	A	20071227	JP 2006-167680	20060616
PRIORITY APPLN. INFO.:			JP 2006-167680	20060616

AB The title pipe has a chemical composition consisting of C ≤0.05, Si ≤0.50, Mn 0.20-1.80, P ≤0.03, S ≤0.005, Cr 14.0-18.0, Ni 5.0-8.0, Mo 1.5-3.5, Cu 0.5-3.5, N 0.005-0.15, O ≤0.006, Cr, Ni, Mo, and Cu in amts. satisfying Cr + 2Ni + 1.1Mo + 0.7Cu ≤32.5, Nb ≤0.20 and/or V ≤0.20 in Nb + V ≥0.05 weight%, and balance Fe, has a martensite-based texture containing 3-15 volume% austenite secondary phase, has yield strength ≥965 MPa, and -40°-Charpy absorption energy (vE-40) ≥50J. Optionally, the steels for the pipe may also contain Ti ≤0.3, Zr ≤0.2, B ≤0.01, W ≤3.0, Ca 0.0005-0.01, and/or Al ≤0.05 weight%. Method for manufacture of the pipe includes shaping a steel having the above given chemical composition into a pipe, its cooling to ≤150°C, and its tempering at 500-580°C for t (h) satisfying T(20 + log t) = 15200-16800, where T is the heating temperature (K).

L18 ANSWER 6 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2007:1469033 CAPLUS  
DOCUMENT NUMBER: 148:82769  
TITLE: Stainless steel pipes with excellent pipe expanding properties for use in oil wells  
INVENTOR(S): Kimura, Mitsuo; Tanaka, Masahito  
PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 10pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007332431	A	20071227	JP 2006-166961	20060616
PRIORITY APPLN. INFO.:			JP 2006-166961	20060616

AB The title pipe has a chemical composition consisting of C ≤0.05, Si ≤0.50, Mn 0.10-1.80, P ≤0.03, S ≤0.005, Cr 14.5-18.0, Ni 2.0-7.0, Mo 0.5-3.5, V ≤0.20, N ≤0.15, O ≤0.008 weight%, and balance Fe, has a tempered martensite-(M) and austenite (A)-based microstructure in A/M ratio of ≥1/4 and containing ≥10 and <50 volume% ferrite, and yield strength <654 MPa.

Optionally, the steels for the pipe may also contain Nb ≤0.20, Ca 0.0005-0.01, Cu ≤3.5, Ti ≤0.3, Zr ≤0.2, B ≤0.01, W ≤3.0, and/or Al ≤0.05 weight%.  
 The pipes have excellent corrosion resistance.

L18 ANSWER 7 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2007:1055552 CAPLUS  
 DOCUMENT NUMBER: 148:542325  
 TITLE: Corrosion performance of steels in deep oil and gas wells and new corrosion resistant oil country tubular goods  
 AUTHOR(S): Kimura, Mitsuo; Miyata, Yukio;  
 Shimamoto, Ken  
 CORPORATE SOURCE: Steel Res. Lab., JFE Steel Corporation, Japan  
 SOURCE: JFE Giho (2007), 17, 42-46  
 CODEN: JGFIAM; ISSN: 1348-0669  
 PUBLISHER: JFE Horudingusu K.K.  
 DOCUMENT TYPE: Journal; General Review  
 LANGUAGE: Japanese

AB A review. CO<sub>2</sub> corrosion and sulfide stress cracking (SSC) in production environment and stress corrosion cracking (SCC) in non production environment are major problems in oil and gas production. CO<sub>2</sub> corrosion resistance and SSC have been improved by the addition of Cr and Mo resp. New martensitic stainless steel pipes (HP13Cr, UHP15Cr) with excellent CO<sub>2</sub> corrosion resistance and good SSC resistance have been developed to further improve the performance. The applicable conditions of the new steels in oil and gas environment have been established. These new martensitic stainless steel pipes have been proven to have excellent properties in high temperature (100-200°) sweet and slightly sour environment.

L18 ANSWER 8 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2006:1175841 CAPLUS  
 DOCUMENT NUMBER: 145:475596  
 TITLE: Stainless steel pipe for oil well excellent in enlarging characteristics  
 INVENTOR(S): Kimura, Mitsuo; Yamazaki, Yoshio; Tanaka, Masahito  
 PATENT ASSIGNEE(S): Jfe Steel Corporation, Japan  
 SOURCE: PCT Int. Appl., 38pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006117926	A1	20061109	WO 2006-JP304032	20060224
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2006307287	A	20061109	JP 2005-131477	20050428

JP 2007146226	A	20070614	JP 2005-342270	20051128
EP 1876253	A1	20080109	EP 2006-728594	20060224
R: DE, FR, IT, SE				
JP 2007169776	A	20070705	JP 2006-282299	20061017
CN 101171351	A	20080430	CN 2006-80014813	20071029
US 20080310990	A1	20081218	US 2007-919158	20071126
PRIORITY APPLN. INFO.:			JP 2005-131477	A 20050428
			JP 2005-342269	A 20051128
			JP 2005-342270	A 20051128
			WO 2006-JP304032	W 20060224

AB Provided is a stainless steel pipe for an oil well which exhibits excellent resistance to the corrosion by CO<sub>2</sub> under a severe corrosion circumstance containing CO<sub>2</sub>, Cl<sup>-</sup>, and the like, exhibits excellent enlarging characteristics, and can be produced at an advantageous cost. A stainless steel pipe for an oil well excellent in enlarging characteristics, which has a chemical composition that C: 0.05 % or less, Si: 0.50 % or less, Mn: 0.10 to 1.50 %, P: 0.03 % or less, S: 0.005 % or less, Cr: 10.5 to 17.0 %, Ni: 0.5 to 7.0 %, Mo: 3.0 % or less, Al: 0.05 % or less, V: 0.20 % or less, N: 0.15 % or less, O: 0.008 % or less, and optionally, resp. specific contents of one or more of Nb, Cu, Ti, Zr, Ca, B and W, and the balance: Fe and inevitable impurities, and which has a structure wherein a tempered martensite phase is a main phase and an austenite phase is contained in an amount of more than 20%.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 9 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2006:381243 CAPLUS

DOCUMENT NUMBER: 144:395302

TITLE: Manufacture of intergranular stress corrosion cracking-resistant circumferential-welded joint of martensitic stainless steel pipes

INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo

PATENT ASSIGNEE(S): Jfe Steel Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006110585	A	20060427	JP 2004-299279	20041013
PRIORITY APPLN. INFO.:			JP 2004-299279	20041013

AB The joint is manufactured by butting edges of martensitic stainless steel pipes and multilayer-overlaying along the circumferential edges, wherein the pipes contain ≤0.010% of P. A martensitic stainless steel pipe with high intergranular stress corrosion cracking resistance in heat-affected zone, containing C ≤0.015, N ≤0.015, Cr 10-14, Ni 3-8, Si ≤1.0, Mn ≤2.0, S ≤0.010, P ≤0.010, Al ≤0.10, and Cu 1-4, Co 1-4, Mo 1-4, and/or W 1-4% is also claimed. The welded joint is stably manufactured without post-heat treatment after welding to give pipelines for CO<sub>2</sub>-containing natural gases in low cost.

L18 ANSWER 10 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2006:230983 CAPLUS

DOCUMENT NUMBER: 144:296665

TITLE: Manufacture of martensitic stainless steel pipe orbital-welded joint with high

INVENTOR(S): resistance to intergranular stress corrosion cracking  
 Miyata, Yukio; Kimura, Mitsuo;  
 Masamura, Katsumi  
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006068757	A	20060316	JP 2004-253106	20040831
PRIORITY APPLN. INFO.:			JP 2004-253106	20040831

**AB** The multiple-pass welding process for forming the multilayer weld, includes a welding heat cycle in at least one pass to heat the heat-affected zone (HAZ) in the pipe surface layer at  $\geq 950^\circ$  (as peak temperature) and a controlled welding heat cycle in later pass to improve intergranular stress corrosion cracking resistance of the HAZ. The heat cycle in the final pass may have a peak above A<sub>1</sub>, that is the lowest temperature at which  $\geq 1$  volume% austenite phase generates in the martensite microstructure of the pipe fully quenched and held at a certain temperature for 20 s. Alternatively the heat cycle in at least one later pass may have a peak between A<sub>1</sub> and 950° and all the heat cycles after the pass may have a peak below A<sub>1</sub>. Alternatively all the heat cycles in later passes may have a peak below A<sub>1</sub> and the total heat input parameter (defined in claim) in the later passes may be  $\leq 12,500$  or  $\geq 14,500$ . The pipe may be made of steel comprising C  $\leq 0.015$ , N  $\leq 0.015$ , Cr 10-14, Ni 3-8, Si  $\leq 1.0$ , Mn  $\leq 2.0$ , P  $\leq 0.03$ , S  $\leq 0.010$ , Al  $\leq 0.10$ ,  $\geq 1$  element from Cu 1-4, Co 1-4, Mo 1-4, and W 1-4 mass%, and balance Fe. Optionally the steel contains Ti, Nb, V, Zr, Ta, Ca, Mg, rare earth metal, and/or B.

L18 ANSWER 11 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2006:51046 CAPLUS  
 DOCUMENT NUMBER: 144:153971  
 TITLE: High-strength stainless steel pipe  
 with high carbon dioxide corrosion resistance for oil well  
 INVENTOR(S): Kimura, Mitsuo; Tamari, Takanori; Yamazaki,  
 Yoshio; Itakura, Noritsugu  
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006016637	A	20060119	JP 2004-193402	20040630
PRIORITY APPLN. INFO.:			JP 2004-193402	20040630

**AB** The stainless steel pipe contains C  $\leq 0.05$ , Si  $\leq 0.5$ , Mn 0.2-1.8, P  $\leq 0.03$ , S  $\leq 0.005$ , Cr 15.5-18.5, Ni 1.5-5, Al  $\leq 0.05$ , V  $\leq 0.2$ , N  $\leq 0.15$ , and O  $\leq 0.006$  weight% and satisfies Cr + 0.65 + Ni + 0.6 + Mo + 0.55 + Cu - 20 + C  $\geq 18.0$  and Cr + Mo + 0.3 + Si - 43.5 + C - 0.4 + Mn - Ni - 0.3 + Cu - 9 + N  $\geq 11.5$  (each element represents content in weight%). Preferably, the pipe

contains martensite as a base base, 5-70 volume% of ferrite, and optionally ≤30 volume% of austenite.

L18 ANSWER 12 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:1184560 CAPLUS

DOCUMENT NUMBER: 143:480742

TITLE: A martensitic stainless steel  
seamless pipe for linepipe

AUTHOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Koseki, Tomoya

CORPORATE SOURCE: Steel Res. Lab., JFE Steel Corp., Japan

SOURCE: JFE Giho (2005), 9, 13-18

CODEN: JGFIAM; ISSN: 1348-0669

PUBLISHER: JFE Horudingusu K.K.

DOCUMENT TYPE: Journal; General Review

LANGUAGE: Japanese

AB A review. A martensitic stainless steel  
seamless pipe for linepipe application, KL-HP12CR, has  
been developed with good weldability, mech. properties and corrosion  
resistance. Weldability is improved by the reduction of both C and N content.  
C reduction is also effective to the improvement of CO<sub>2</sub> corrosion resistance  
achieving the corrosion rate less than 0.127 mm/y under the CO<sub>2</sub>  
environment at 160° and 2.0 MPa. It can be applied under the H<sub>2</sub>S  
environment at pH 4.0 and 0.001 MPa, since the resistance to sulfide  
stress cracking (SSC) is improved by Mo addition. The pipe has  
X80-grade strength and sufficient low temperature toughness for the practical  
use as a linepipe. Post weld heat treatment (PWHT) in a few minutes, the  
reduction of C content and addition of Ti are effective to prevent  
intergranular  
stress corrosion cracking (IGSCC) at the heat affected zone. Further  
application of the pipe is expected for the transportation of  
product fluid with corrosive gas such as CO<sub>2</sub>, as an economical material  
with low-life-cycle cost.

L18 ANSWER 13 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:1184559 CAPLUS

DOCUMENT NUMBER: 145:171253

TITLE: High Cr stainless steel OCTG (Oil Country  
Tubular Goods) with high strength and superior  
corrosion resistance

AUTHOR(S): Kimura, Mitsuo; Tamari, Takanori; Shimamoto,  
Ken

CORPORATE SOURCE: Steel Res. Lab., JFE Steel Corp., Japan

SOURCE: JFE Giho (2005), 9, 7-12

CODEN: JGFIAM; ISSN: 1348-0669

PUBLISHER: JFE Horudingusu K.K.

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB New martensitic stainless steel pipes  
(HP13Cr, UHP15Cr) with excellent CO<sub>2</sub> corrosion resistance and good sulfide  
stress cracking (SSC) resistance have been developed and those application  
limits in oil and gas environment of the new steels have been clarified.  
CO<sub>2</sub> corrosion resistance is remarkably improved with higher Cr and lower C  
content of the steel. The critical temperature of HP13Cr under the high CO<sub>2</sub>  
environment is 160° and that of UHP15Cr is 200° even with  
high strength of YS over 861 MPa. The SSC resistance is improved with the  
addition of Mo. These new martensitic stainless steel  
pipes are proven to have excellent properties in sweet and  
slightly sour environments where conventional API-13Cr stainless  
steel pipes are not applicable.

L18 ANSWER 14 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:732784 CAPLUS  
 DOCUMENT NUMBER: 143:214817  
 TITLE: Martensitic stainless steel tube  
 INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
 Itakura, Noritsugu; Masamura, Katsumi  
 PATENT ASSIGNEE(S): JFE Steel Corporation, Japan  
 SOURCE: PCT Int. Appl., 23 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005073419	A1	20050811	WO 2004-JP18233	20041201
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2005336601	A	20051208	JP 2004-329060	20041112
EP 1717328	A1	20061102	EP 2004-801614	20041201
R: DE, FR, IT				
CN 1906319	A	20070131	CN 2004-80040725	20041201
BR 2004018480	A	20070619	BR 2004-18480	20041201
US 20090017238	A1	20090115	US 2006-587807	20060728
PRIORITY APPLN. INFO.:				
			JP 2004-24687	A 20040130
			JP 2004-135975	A 20040430
			JP 2004-329060	A 20041112
			WO 2004-JP18233	W 20041201

AB A martensitic stainless steel tube being excellent in the resistance to stress corrosion cracking in a heat affected zone has a chemical composition of C <0.0100, N <0.0100, Cr 10-14 and Ni

3-8%, or, further suitable amts. of Si, Mn, P, S and Al are contained, and further one or more of Cu ≤4, Co ≤4, Mo ≤4 and W ≤4% and one or more of Ti ≤0.15, Nb ≤0.10, V ≤0.10, Zr ≤0.10, Hf ≤0.20 and Ta ≤0.20 are contained in such a manner that  $C_{sol} = C - \frac{1}{3} \times C_{pre}$  is <0.0050 %, where  $C_{pre} = 12.0 \{Ti/47.9 + 1/2(Nb/92.9 + Zr/91.2) + 1/3(V/50.9 + Hf/178.5 + Ta/180.9) - N/14.0\}$ , provided that  $C_{pre} = 0$  is taken when  $C_{pre} < 0$ . The martensitic stainless steel tube may further contain one or more of Ca, Mg, REM and B. The above composition allows the prevention of the grain boundary stress corrosion cracking appearing in a heat affected zone.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 15 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2005:409715 CAPLUS  
 DOCUMENT NUMBER: 142:449843  
 TITLE: High-strength stainless steel pipe for line pipe excellent in corrosion resistance and method for production thereof

INVENTOR(S): Kimura, Mitsuo; Tamari, Takanori; Yamazaki, Yoshio; Mochizuki, Ryosuke  
 PATENT ASSIGNEE(S): JFE Steel Corporation, Japan  
 SOURCE: PCT Int. Appl., 44 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005042793	A1	20050512	WO 2004-JP16075	20041022
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1683885	A1	20060726	EP 2004-793183	20041022
R: DE, FR, IT, SE				
CN 1875121	A	20061206	CN 2004-80031927	20041022
BR 2004016001	A	20070102	BR 2004-16001	20041022
JP 2005336599	A	20051208	JP 2004-311885	20041027
US 20070074793	A1	20070405	US 2006-576885	20060424
NO 2006002467	A	20060530	NO 2006-2467	20060530
PRIORITY APPLN. INFO.:				
			JP 2003-373404	A 20031031
			JP 2004-38854	A 20040216
			JP 2004-117445	A 20040413
			JP 2004-135973	A 20040430
			WO 2004-JP16075	W 20041022

**AB** A high-strength stainless steel pipe for a line pipe excellent in corrosion resistance, which has a chemical composition, in mass %, that C: 0.001 to 0.015 %, Si: 0.01 to 0.5 %, Mn: 0.1 to 1.8 %, P: 0.03 % or less, S: 0.005 % or less, Cr: 15 to 18 %, Ni: 0.5 % or more and less than 5.5 %, Mo: 0.5 to 3.5 %, V: 0.02 to 0.2 %, N: 0.001 to 0.015 %, O: 0.006 % or less, with the proviso that C + 0.65Ni + 0.6Mo - 20C ≥ 18.5, Cr + Mo + 0.3Si - 43.5C - 0.4Mn - Ni - 0.3Cu - 9N ≥ 11.5 and C + N ≤ 0.025 are satisfied. Preferably, the pipe is subjected to a quenching-tempering treatment. The steel pipe may further contain 0.002 to 0.05 % of Al. It may further contain one or more selected from among Nb, Ti, Zr, B and W, and/or, Cu or Ca. The steel pipe preferably has a structure containing martensite, ferrite and retained γ.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 16 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2004:778750 CAPLUS  
 DOCUMENT NUMBER: 141:263896  
 TITLE: Coated wires for arc welding of martensitic stainless steels  
 INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
 Toyooka, Takaaki; Yasuda, Koichi  
 PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004261858	A	20040924	JP 2003-56895	20030304
PRIORITY APPLN. INFO.:			JP 2003-56895	20030304

AB The wires consist of C + N ≤0.02, Si ≤1.0, Mn 0.2-3.0, Cr 11-15, Ni 2-10, O ≤0.01, Cu ≤2 and/or Mo ≤4 weight, and balance Fe and have Cu coatings with optional Ni underlayers. The wires may also contain ≥1 of (a) ≤0.3 weight% (as total) V and/or Ti, (b) ≤4 weight% (as total) Co and/or W, and (c) Nb ≤0.20, Zr ≤0.20, Ta ≤0.20, and/or B ≤0.0050 weight%. Tough welds are formed with excellent bead shape at any positions and the wires are especially suitable for manufacture of linepipes.

L18 ANSWER 17 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2004:677706 CAPLUS  
DOCUMENT NUMBER: 141:193566  
TITLE: Wire material and method for welding martensitic stainless steel tube for pipeline  
INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Toyooka, Takaaki; Yasuda, Koichi  
PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004230392	A	20040819	JP 2003-18503	20030128
PRIORITY APPLN. INFO.:			JP 2003-18503	20030128

AB The claimed wire material is an Fe alloy containing C + N ≤0.02, Si ≤1.0, Mn 0.2-3.0, Cr 11-15, Ni 2-10, O ≤0.01, Co and/or W (as total) ≤4, and optionally Cu ≤2, and Mo ≤4 weight%. Optionally, the Fe alloy contains (1) V and/or Ti (as total) ≤0.3, (2) rare earth metals 0.01-0.30, and/or (3) Nb ≤0.20, Zr ≤0.20, Ta ≤0.20, and/or B ≤0.0050 weight%. The claimed process comprises gas metal-arc welding at circumference of butted martensitic stainless steel tubes containing 10-14 weight% Cr and 1.0-7.0 weight% Ni under pure inert shielding gas. The resulting welded tube structure, especially suitable for petroleum and natural gas pipelines, is free from welding defects and provides high toughness.

L18 ANSWER 18 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2004:588088 CAPLUS  
DOCUMENT NUMBER: 141:109507  
TITLE: Welding wire and method for welding martensitic stainless steel tube  
INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Toyooka, Takaaki; Yasuda, Koichi  
PATENT ASSIGNEE(S): JFE Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004202556	A	20040722	JP 2002-376266	20021226
PRIORITY APPLN. INFO.:			JP 2002-376266	20021226

AB The claimed welding wire is an Fe alloy containing C + N ≤0.02, Si ≤1.0, Mn 0.2-3.0, Cr 11-15, Ni >7 and ≤10, and O ≤0.01 weight% and optionally Cu ≤2 and/or Mo ≤4 weight%. The welding wire contains ≤0.3 weight% (as total) V and/or Ti and/or 0.01-7.0 weight% rare earth metals. Martensitic stainless steel tubes containing 10-14 weight% Cr and 1.0-7.0 weight% Ni are full-circled butt welded by gas-metal arc welding with the above wire under an inert gas shielding. The resulting weld structure, especially suitable for line pipes, is free from welding defects and provides high toughness.

L18 ANSWER 19 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:529467 CAPLUS  
DOCUMENT NUMBER: 141:75137  
TITLE: Wires for MIG welding of martensitic stainless steel pipes and the welding method  
INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Toyooka, Takaaki; Yasuda, Koichi; Sango, Tetsuya;  
Takatsu, Tamao; Saito, Teiichiro  
PATENT ASSIGNEE(S): JFE Steel Corp., Japan; Nippon Welding Rod Co., Ltd.  
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004181527	A	20040702	JP 2003-48530	20030226
PRIORITY APPLN. INFO.:			JP 2002-293244	A 20021007

AB The wires are Fe alloys containing C + N ≤0.02, Si ≤1.0, Mn 0.2-3.0, Cr 11-15, Ni 2-10, rare earth metals 0.01-0.30, O ≤0.01, and optionally Cu ≤2 and/or Mo ≤4 weight% and having surface coatings of Ni and Cu in the order. Optionally, the wire core may also contain V and/or Ti ≤0.3, Co and/or W ≤4, and/or Nb ≤0.20, Zr ≤0.20, Ta ≤0.20, and/or B ≤0.0050 weight%. Butt welding of martensitic stainless steel pipes containing 10-14 weight% Cr and 1.0-7.0 weight% Ni at the pipe periphery is also claimed. Tough welds can be formed under excellent bead formation in any positions.

L18 ANSWER 20 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:749899 CAPLUS  
DOCUMENT NUMBER: 139:263732  
TITLE: Iron alloy welding wires for MIG (metal inert gas) welding of martensitic stainless steel pipes  
INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Toyooka, Takaaki; Ishii, Hideaki; Yasuda, Koichi;  
Sango, Tetsuya; Takatsu, Tamao; Saito, Teiichiro

PATENT ASSIGNEE(S): JFE Steel Corp., Japan; Nippon Welding Rod Co., Ltd.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003266194	A	20030924	JP 2003-5516	20030114
PRIORITY APPLN. INFO.:			JP 2002-4713	A 20020111

AB The welding wires are made of Fe alloys containing (C + N) ≤ 0.02, Si ≤1.0, Mn 0.2-3.0, Cr 11-15, Ni 2-10, rare earth metals 0.01-0.30, O ≤0.01, and Cu ≤2 and/or Mo ≤4 weight%, and have Cu platings on the surfaces. Martensitic stainless steel pipes containing 10-14 weight% of Cu and 1.0-7.0 weight% of Ni are butt MIG welded along with their circumferences by using pure inert gases as shielding gases. The welded pipes are suitable for linepipes.

L18 ANSWER 21 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:271937 CAPLUS  
 DOCUMENT NUMBER: 138:274575  
 TITLE: Manufacture of 13Cr martensitic stainless steel seamless steel pipe having high strength and toughness for oil well  
 INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
 Toyooka, Takaaki  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003105441	A	20030409	JP 2001-303722	20010928
PRIORITY APPLN. INFO.:			JP 2001-303722	20010928

AB The title pipe is manufactured from 13Cr martensitic stainless steel containing C 0.15-0.25, Si ≤1.0, Mn 0.1-1.0, P ≤0.030, S ≤0.0050, Cr 11.0-14.0, Ni ≤0.50, V ≤0.15, N ≤0.07, and Al ≤0.1 weight% by following steps; pipe forming by heating to austenitic region, piercing, and then rolling; hot finish rolling; tempering at ≤Ac1 point; where the process comprises hot finish rolling by satisfying (1) 15TR - 100RA - 10500 ≤0 [TR = finish rolling starting temperature (°); RA = reduction of area in finish rolling (%)], cooling to room temperature, and then tempering with parameter TP 18200-20200; (2) TP = (TT + 273 )(20 + log t) [TP = tempering parameter; TT = tempering temperature (°); t = tempering time (h)]; to give a yield strength (YS) 655 MPa-class product. Also claimed process comprises hot finish rolling by satisfying (3) 10TR - 100RA - 4500 ≤0 and then tempering with TP 16200-19800 to give a 758 MPa-class product. Also claimed process comprises hot finish rolling by satisfying (4) 10TR - 150RA ≤0 and then tempering with 16000-18200 to give a 861 MPa-class product.

L18 ANSWER 22 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:188078 CAPLUS  
 DOCUMENT NUMBER: 138:208790

TITLE: Manufacture of high-strength steel tube  
 joint having good corrosion resistance for oil well  
 INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio;  
 Toyooka, Takaaki; Ishii, Hideaki; Yasuda, Koichi  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003071589	A	20030311	JP 2001-260895	20010830
PRIORITY APPLN. INFO.:			JP 2001-260895	20010830

AB The joints are manufactured by gas tungsten arc welding a high strength martensite-based stainless steel tube containing C ≤0.03, Si ≤0.70, Mn 0.30-2.00, P ≤0.03, S ≤0.005, Cr 10.5-15.0, Ni ≤7.0, Al ≤0.05, N ≤0.03, O ≤0.01, and Nb ≤0.20 and/or V ≤0.20 weight% with a welding material containing C + N ≤0.3, Si ≤1.0, Mn ≤2.5, Cr 10.5-21.5, Ni ≤8.0 weight%, and balance Fe. Joints are also welded by gas metal arc.

L18 ANSWER 23 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2003:173024 CAPLUS  
 DOCUMENT NUMBER: 138:208384  
 TITLE: Martensitic stainless steel for manufacture of seamless pipe having high strength and cold toughness  
 INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo; Toyooka, Takaaki  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Eur. Pat. Appl., 14 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1288316	A1	20030305	EP 2002-18269	20020822
EP 1288316	B1	20090225		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2004027351	A	20040129	JP 2002-221633	20020730
JP 3937964	B2	20070627		
US 20030066580	A1	20030410	US 2002-226916	20020823
US 6846371	B2	20050125		
NO 2002004097	A	20030303	NO 2002-4097	20020828
PRIORITY APPLN. INFO.:			JP 2001-259889	A 20010829
			JP 2002-128533	A 20020430

AB The stainless steel for manufacture of seamless pipes having high strength and toughness contains C 0.005-0.30, Si 0.10-1.0, Mn 0.05-2.0, Cr 10.0-15.0, Al 0.001-0.05, P ≤0.03, and S ≤0.005%, optionally with Ni ≤7.0, Mo ≤3.0, Cu ≤3.0, Nb ≤0.2, V ≤0.2, Ti ≤0.3, Zr ≤0.2, B 0.0005-0.01, N ≤0.07, Ca 0.00005-0.01, and/or rare-earth metals 0.0005-0.01%. The stainless steel ingot is heated in the austenitic range at 1100-1300°, and the pipe

preform is manufactured by piercing and elongation, followed by cooling to form a martensitic structure. The pipe preform is reheated to a temperature in the Ac1-Ac3 transformation range (especially 815-920°), and is finished by hot rolling with 10-90% reduction, followed by cooling and tempering. The finished pipe typically has cold (-40°) impact toughness ≥180 J/cm<sup>2</sup>. The typical stainless steel contains C 0.10, Si 0.35, Mn 0.65, Cr 12.8, Al 0.023, P 0.019, S 0.001, Ni 0.01, V 0.05, and N 0.02%. The finished pipe showed tensile strength 762 MPa, yield point 589 MPa, and the cold impact toughness of 210 longitudinal and 183 J/cm<sup>2</sup> transverse.

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 24 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:358691 CAPLUS  
 DOCUMENT NUMBER: 136:343803  
 TITLE: Wire for MIG welding of martensitic stainless steel  
 INVENTOR(S): Ishii, Hideaki; Yasuda, Koichi; Miyata, Yukio;  
                  ; Kimura, Mitsuo  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002137086	A	20020514	JP 2000-330942	20001030
PRIORITY APPLN. INFO.:			JP 2000-330942	20001030
AB A wire for MIG welding of martensitic stainless steel with has a composition containing Cr 11-15, Ni 2-7, and REM 0.01-0.30%. Welding the wire si conducted by using an inert gas (Ar, He, Ar + He) as the arc shielding gas. Welds with high strength and toughness can be obtained a low cost.				

L18 ANSWER 25 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:358687 CAPLUS  
 DOCUMENT NUMBER: 136:373168  
 TITLE: Production of high-strength oil well steel  
pipe joints having superior corrosion  
resistance  
 INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio;  
                  Toyooka, Takaaki  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002137058	A	20020514	JP 2000-326699	20001026
PRIORITY APPLN. INFO.:			JP 2000-326699	20001026
AB The oil well pipes are manufactured from martensitic stainless steel containing C ≤0.03, Si ≤0.70, Mn 0.3-2.0, P ≤0.03, S ≤0.005, Cr 10.5-15.0, Ni ≤7.0, Al				

$\leq 0.05$ ,  $N \leq 0.03$ ,  $O \leq 0.01$ , and optionally  $\geq 1$  metals of  $Nb \leq 0.20$ ,  $V \leq 0.20$ ,  $Mo 0.1-3.0$ ,  $Cu \leq 3.5$ ,  $Ti \leq 0.3$ ,  $Zr \leq 0.2$ ,  $B 0.0005-0.01$ , and  $W \leq 3.0\%$ . The joint sections of the steel pipes has circumference welds containing  $C+N \leq 0.3$ ,  $Si \leq 1.0$ ,  $Mn \leq 2.5$ ,  $Cr 10.5-24.0$ ,  $Ni \leq 8.0$ ,  $Nb \leq 0.20$ ,  $V \leq 0.20$ , and optionally  $\geq 1$  metals of  $Mo \leq 3.5$ ,  $Cu \leq 3.5$ ,  $Ti \leq 0.3$ ,  $Zr \leq 0.2$ ,  $Ca \leq 0.01$ ,  $B \leq 0.01$ ,  $W \leq 3.5$ , and rare earth metals (REM)  $\leq 0.1\%$  under controlled welding conditions. The martensitic steel pipe joints show yield strength  $\geq 551$  MPa and high pitting resistance as well as weldability with toughness in the heat-affected zone.

L18 ANSWER 26 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2002:265184 CAPLUS

DOCUMENT NUMBER: 136:297871

TITLE: High-chromium martensitic stainless steel pipes showing high corrosion resistance and excellent weldability for line pipes, and their preparation

INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio; Toyooka, Takaaki; Murase, Fumio

PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002105604	A	20020410	JP 2000-305937 JP 2000-305937	20001005 20001005

PRIORITY APPLN. INFO.: AB The stainless steel pipes contain  $C \leq 0.02$ ,  $Si \leq 1.0$ ,  $Mn 0.2-3.0$ ,  $P \leq 0.05$ ,  $S \leq 0.005$ ,  $Cr 10-14$ ,  $Ni 0.2-7.0$ ,  $Mo 0.2-3.0$ ,  $Al \leq 0.1$ , and  $N \leq 0.07\%$ , and have structure containing martensite as a main phase and  $\geq 5$  area% of austenite. The pipes may further contain (a)  $\geq 1$  selected from  $Ti \leq 0.15$ ,  $Nb \leq 0.2$ ,  $Zr \leq 0.15$ ,  $V \leq 0.2$ , and  $Ta \leq 0.15$ , and/or (b)  $Ca \leq 0.006\%$ . Stainless steel billets of the compns. are formed into seamless pipes, heated at  $\geq Ac_3$ , quench hardened, and tempered at  $\geq 520^\circ$  to precipitate austenite phase and to give the claimed structure.

L18 ANSWER 27 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2002:155014 CAPLUS

DOCUMENT NUMBER: 136:203556

TITLE: Martensitic stainless steel pipes with good balance of strength and toughness for oil wells and their manufacture

INVENTOR(S): Miyata, Yukio; Toyooka, Takaaki;

PATENT ASSIGNEE(S): Kimura, Mitsuo; Kitahaba, Yoshikazu

SOURCE: Kawasaki Steel Corp., Japan; JFE Steel Corp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002060909	A	20020228	JP 2000-242365	20000810
JP 3491149	B2	20040126		
PRIORITY APPLN. INFO.:			JP 2000-242365	20000810
AB The process comprises heat treatment of steel pipes containing C 0.17-0.22, Si ≤ 1.0, Mn 0.25-1.0, P ≤ 0.03, S ≤ 0.005, Cr 12-14, Ni 0.01-0.5, N ≤ 0.06, Nb 0.01-0.07, and optionally V ≤ 0.20% at Ac <sub>3</sub> -1100° (= T°) for 60-1800 s (= t s) where T + 100log(t/60) - 500[[C]] + [N]] - 4000[Nb] ≤ 880 [T, t = defined as above; [C], [N], [N] = weight% of each element, resp.] is satisfied, quenching, and austempering at ≤Ac <sub>1</sub> °. The thus-processed pipes satisfying yield strength ≥758 MPa and Charpy absorption energy at -10° (vE-10) ≥50J are also claimed. The pipes withstand severe corrosive environments such as in deep oil wells in Arctic area.				

L18 ANSWER 28 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2002:26063 CAPLUS  
 DOCUMENT NUMBER: 136:105574  
 TITLE: High-strength martensite type stainless steel tubes having excellent low-temperature toughness and high resistance to carbon dioxide corrosion for oil well and manufacture thereof  
 INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio; Toyooka, Takaaki; Kitahaba, Yoshikazu  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002004009	A	20020109	JP 2000-182934	20000619
PRIORITY APPLN. INFO.:			JP 2000-182934	20000619
AB The title steel tubes contain C ≤ 0.05, Si ≤ 0.50, Mn 0.30-1.50, P ≤ 0.03, S ≤ 0.005, Cr 11.0-17.0, Ni 2.0-7.0, Mo ≤ 3.0, Al ≤ 0.05, V ≤ 0.20, N ≤ 0.12, and O ≤ 0.005%, satisfy Cr+Mo+0.3Si-40C-10N-Ni-0.3Mn ≤ 10, and have a structure containing ≤10% residual austenite. The steel tubes are manufactured by hot rolling steel having the above composition to tubes and tempering at 500-590°.				

L18 ANSWER 29 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2001:786010 CAPLUS  
 DOCUMENT NUMBER: 135:333769  
 TITLE: High strength martensite stainless steel with good weldability for oil well tubes  
 INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio; Toyooka, Takaaki  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001300730	A	20011030	JP 2000-114934 JP 2000-114934	20000417 20000417
PRIORITY APPLN. INFO.:				
AB The maximum Hv of the weld of the tube made from the steel comprising C ≤0.03, Si ≤0.7, Mn 0.3-2, P ≤0.03, S ≤0.005, Cr 10.5-15, Ni ≤7, Al ≤0.05, N ≤0.2, O ≤0.01%, Fe bal. is <380; and the average Hv difference between the base metal and the heat-affected zone of the steel is <100. The steel may further contain Nb ≤0.2, V ≤0.2, Mo 0.1-3, Cu ≤3.5, Ti ≤0.3, Zr ≤0.2, W ≤3, B≤0.0005-0.01, and Ca 0.0005-0.01%. The title steel has high corrosion resistance and low temperature toughness.				

L18 ANSWER 30 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 2001:488597 CAPLUS  
 DOCUMENT NUMBER: 135:64475  
 TITLE: Electrodes or filler rods for electric-arc welding of low-carbon martensitic stainless steel  
 INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
 Toyooka, Takaaki; Ishii, Hideaki; Yasuda, Koichi;  
 Sango, Tetsuya; Takatsu, Tamao; Ohmae, Takashi  
 PATENT ASSIGNEE(S): Kawasaki Steel Corporation, Japan; Nippon Welding Rod Co., Ltd.  
 SOURCE: Eur. Pat. Appl., 16 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1112804	A2	20010704	EP 2000-128443	20001222
EP 1112804	A3	20031001		
EP 1112804	B1	20060809		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001246494	A	20010911	JP 2000-262578	20000831
JP 3576472	B2	20041013		
NO 2000006582	A	20010629	NO 2000-6582	20001221
AT 335567	T	20060915	AT 2000-128443	20001222
JP 1999-372280 A 19991228				
JP 2000-262578 A 20000831				
PRIORITY APPLN. INFO.:				

AB The welding-filler rods for high-toughness welds in martensitic stainless steels contain C and N ≤0.02 total, Si ≤0.5, Mn 0.2-3, Cr 11-15, and Ni 2-7% with Fe as the balance, optionally with Cu ≤2, Mo ≤4, V and Ti ≤0.3 total, and/or rare earth metals ≤0.3%. The filler rods are suitable for elec.-arc welding of low-C stainless steels containing C ≤0.05, Cr 10-14, Ni 1-7, Mo 0.2-3.5, and Cu 0.2-2.0%. The combined content of Cr, Ni, Mo, and Cu in the weld and in the martensitic steel is limited by math. formula to obtain the welds having high toughness and corrosion resistance, especially after the d.c. or a.c. welding with W-arc electrodes. The filler rods are suitable for elec.-arc welding of pipes made of the martensitic stainless steel containing C 0.011, N 0.008, Si 0.16, Mn 0.41, Cr 11.98, Ni 5.12, Mo 1.98, P 0.013, and S 0.0015%. The typical welding filler rods contain C 0.008, N 0.016, Si 0.35, Mn 0.46, Cr 11.89, Ni 6.23, Mo 2.54, P 0.023, and S 0.002%. The resulting welds showed tensile strength of 820 MPa with

cold impact toughness at -60°, as well as good resistance to corrosion.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 31 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 2001:255052 CAPLUS  
DOCUMENT NUMBER: 134:255134  
TITLE: High-strength martensitic stainless steel tube with high toughness, corrosion resistance and weldability for oil wells  
INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio;  
Toyooka, Takaaki  
PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001098348	A	20010410	JP 1999-270762	19990924
JP 3941298	B2	20070704		

PRIORITY APPLN. INFO.: JP 1999-270762 19990924  
AB The title tube is from steel containing C ≤ 0.03, N ≤ 0.03, Si ≤ 0.70, Mn 0.30-2.00, P ≤ 0.03, S ≤ 0.005, Cr 10.5-15.0, Ni ≤ 7.0, Al ≤ 0.05, Nb ≤ 0.20, V ≤ 0.20, and O ≤ 0.01%, with C + N ≤ 0.04, 0.8Nb + 0.5V = 0.01-0.20, Cr + Mo + 16N + 0.5Ni - 5C ≥ 11.5, and 1.1(C + 1.5Si + Mo) - Ni - 0.5(Mn + Cu) - 30(C + N) ≤ 11.

L18 ANSWER 32 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1999:232801 CAPLUS  
DOCUMENT NUMBER: 130:341092  
TITLE: Weldability and corrosion resistance of 12Cr-5Ni-2Mo stainless steel seamless pipe  
AUTHOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Toyooka, Takaaki; Nakano, Yoshifumi; Murase, Fumio  
CORPORATE SOURCE: Technical Research Laboratories, Kawasaki Steel Corporation, Handa, 475, Japan  
SOURCE: OMAE 1997, Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering, 16th, Yokohama, Apr. 13-17, 1997 (1997), Volume 3, 113-117.  
Editor(s): Salama, Mamdouh M. American Society of Mechanical Engineers: New York, N. Y.  
CODEN: 67LHAV  
DOCUMENT TYPE: Conference  
LANGUAGE: English  
AB The martensitic stainless steel has been seldom used for linepipes because of the poor weldability. Weldability of the martensitic stainless steel was studied in conjunction with chemical composition, particularly the effect of lowering C and N was emphasized. On the basis of the extended test, a new type of martensitic stainless steel seamless pipe with good weldability was developed for linepipes used in the CO<sub>2</sub> and light H<sub>2</sub>S environment. The steel with the composition of 0.01C-12Cr-5Ni-2Mo-0.01N is suitable for welding without preheating as the result of lowering C and N contents. It gives good low temperature toughness in

both base metal and weldments not subjected to PWHT. The Charpy absorbed energy of the weldment is about 200 J at -80°C. The steel has yield strength higher than 80 ksi. Sulfide stress cracking (SSC) in the martensitic stainless steel occurs in most cases from pitting when the passive film exists. The resistance of the new steel to SSC is improved by raising the pitting resistance through the addition of Mo. The welded joint of the steel has a good resistance to SSC at 0.002 MPa H<sub>2</sub>S partial pressure in the 10% NaCl solution of pH 4.0. The martensitic stainless steel pipes are considered as the substitutes for the duplex stainless steel flow lines to some extent. Gullfaks project in Norway is the first development in which the martensitic stainless steel seamless pipes are used as flow lines.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 33 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1998:314946 CAPLUS  
 DOCUMENT NUMBER: 129:57060  
 ORIGINAL REFERENCE NO.: 129:11817a,11820a  
 TITLE: High-strength martensitic stainless steels for oil well pipes showing high resistance to stress-corrosion cracking and excellent tensile characteristics at high temperature  
 INVENTOR(S): Kimura, Mitsuo; Miyata, Yukio;  
 Toyooka, Takaaki; Kitahaba, Yoshikazu  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10130787	A	19980519	JP 1996-286849	19961029
JP 3254146	B2	20020204		

PRIORITY APPLN. INFO.: JP 1996-286849 19961029  
 AB The title stainless steels contain C ≤0.05, Si ≤0.50, Mn 0.30-1.50, P ≤0.03, S ≤0.005, Cr 11.0-17.0, Ni 3.0-7.0, Mo 0.5-5.0, Al ≤0.05, N 0.01-0.15, O ≤0.005, Nb ≤0.20, and V ≤0.20 weight% and satisfy [0.8Nb% + V% = 0.02-0.20, Cr% + 3.2Mo% + 16N% + 0.5Ni% - 5C% ≥17, 1.1(Cr% + 1.5Si% + Mo%) - Ni% - 0.5Mn% - 30(C% + N%) ≤6]. The stainless steels may further contain (A) Cu 0.5-3.5, Ti ≤0.3, Zr ≤0.2, Ca 0.0005-0.01, B 0.0005-0.01, and/or W ≤3.0 weight%. The stainless steels show high resistance to corrosion cracking by CO<sub>2</sub>, Cl<sup>-</sup>, and H<sub>2</sub>S.

L18 ANSWER 34 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
 ACCESSION NUMBER: 1998:25542 CAPLUS  
 DOCUMENT NUMBER: 128:143649  
 ORIGINAL REFERENCE NO.: 128:28221a,28224a  
 TITLE: Martensite-type stainless steel with pitting resistance and martensite-type stainless steel metal pipe  
 INVENTOR(S): Miyata, Yukio; Kimura, Mitsuo;  
 Kozeki, Satoshi; Toyooka, Takaaki  
 PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10001752	A	19980106	JP 1996-153611	19960614
PRIORITY APPLN. INFO.:			JP 1996-153611	19960614

AB The steel contains C ≤ 0.02, Si ≤ 0.5, Mn 0.8-3.0, Cr 10.0-14.0, Ni 0.2-2.0, Cu 0.2-1.0, and N 0.03-0.07 weight%. The steel may further contain (A) ≤ 0.3 weight% Ti, V, Zr, Nb, and/or Ta. A pipe made of the stainless steel is also claimed, which is useful for petroleum pipeline, etc.

L18 ANSWER 35 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1997:640961 CAPLUS  
DOCUMENT NUMBER: 127:296609  
ORIGINAL REFERENCE NO.: 127:57931a, 57934a  
TITLE: Development of martensitic stainless steel seamless pipe for linepipe application  
AUTHOR(S): Miyata, Yukio; Kimura, Mitsuo;  
Murase, Fumio  
CORPORATE SOURCE: Gijutsu Kenkyusho, Kawasaki Steel Corp., Chiba, 260, Japan  
SOURCE: Kawasaki Seitetsu Giho (1997), 29(2), 90-96  
CODEN: KWSGBZ; ISSN: 0368-7236  
PUBLISHER: Kawasaki Seitetsu K.K.  
DOCUMENT TYPE: Journal  
LANGUAGE: Japanese

AB Two types of martensitic stainless steel seamless pipes were developed for linepipe applications. One is 0.01C-11Cr-1.5Ni-0.5Cu-0.01N steel pipe for CO<sub>2</sub> environment, and the other is 0.01C-12Cr-5Ni-2Mo-0.01N steel pipe for CO<sub>2</sub> and slight H<sub>2</sub>S environment. Both pipes are suitable for welding without preheating. They give X80 grade strength and good low temperature toughness of welds without PWHT. The former pipe gives better resistance to CO<sub>2</sub> corrosion strength and good low temperature toughness of welds without PWHT. The former pipe gives better resistance to CO<sub>2</sub> corrosion than the 13Cr martensitic stainless steel for OCTG. The latter pipe gives good SSC resistance in 10% NaCl solution with H<sub>2</sub>S partial pressure of 0.002MPa and pH value of 4.0. These steel pipes have a great economical benefit and are expected to substitute conventional flow line pipes using carbon steel with inhibitor injection or costly corrosion resistance materials, such as, duplex stainless steel.

L18 ANSWER 36 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN  
ACCESSION NUMBER: 1997:640960 CAPLUS  
DOCUMENT NUMBER: 127:296631  
ORIGINAL REFERENCE NO.: 127:57931a, 57934a  
TITLE: Development of high strength martensitic stainless OCTG with superior corrosion resistance  
AUTHOR(S): Kimura, Mitsuo; Miyata, Yukio;  
Kitahaba, Yoshikazu  
CORPORATE SOURCE: Gijutsu Kenkyusho, Kawasaki Steel Corp., Chiba, 260, Japan  
SOURCE: Kawasaki Seitetsu Giho (1997), 29(2), 84-89  
CODEN: KWSGBZ; ISSN: 0368-7236  
PUBLISHER: Kawasaki Seitetsu K.K.

DOCUMENT TYPE: Journal  
LANGUAGE: Japanese

AB A new 13Cr martensitic stainless steel with excellent resistance to CO<sub>2</sub> corrosion and good resistance to SSC was developed and its application limit in oil and gas environment of the new steel was clarified. The CO<sub>2</sub> corrosion rate of the 13Cr steel is reduced with a decrease in C content and an increase in Ni content. The critical CO<sub>2</sub> partial pressure for this new steel is 5 MPa at 150°. The SSC resistance increases with an increase in Mo content. The SSC resistance of 13Cr steel depends on hydrogen permeability. This new 13Cr steel pipe proves to have excellent properties in a sweet and slightly sour environment.

L18 ANSWER 37 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1987:500650 CAPLUS  
DOCUMENT NUMBER: 107:100650  
ORIGINAL REFERENCE NO.: 107:16369a, 16372a  
TITLE: Martensitic stainless steel for petroleum well pipes  
INVENTOR(S): Kurisu, Takao; Kimura, Mitsuo; Nakai, Yoichi  
PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62054063	A	19870309	JP 1985-190960	19850831
JP 06043626	B	19940608		

PRIORITY APPLN. INFO.: JP 1985-190960 19850831  
AB A hot-rolled plate of a steel containing C 0.001-0.05, Si <1, Mn 0.3-2, Cr 11-15, Ni 3-6, Ca 0.0005-0.005, Al 0.01-0.1, O <0.004, P <0.01, S <0.005, N 0.01-0.2, and/or Mo 0.05-3, and optionally Ti <0.2, Zr <0.2, Nb <0.2, and/or La <0.02% has as rolled complete martensitic structure and high sulfide stress-corrosion cracking resistance and is suitable for petroleum well pipes. A test piece (76.2 + 4.7 + 1.6 mm) from a hot-rolled plate (6-mm thick, tensile strength 80, yield strength 62 kg/mm<sup>2</sup>, elongation 26.9%) of a steel containing C 0.009, Si 0.6, Mn 0.7, P 0.005, S 0.0011, Cr 13.1, Al 0.024, O 0.0022, Ca 0.0018, Ti 0.015, Ni 4.5, Mo 1.2, and N 0.05% was immersed for 500 h under stress into aqueous 3% NaCl, equilibrated with CO<sub>2</sub> (20) and H<sub>2</sub>S (0.1 atm) at 150° in an autoclave. No cracks were observed at a stress of 1.1 times the yield strength of the steel. A similar test piece of a conventional steel containing less (1.04%) Ni cracked in the test at a stress of 0.5 times the yield strength (72 kg/mm<sup>2</sup>) of the steel.

L18 ANSWER 38 OF 54 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1986:576714 CAPLUS  
DOCUMENT NUMBER: 105:176714  
ORIGINAL REFERENCE NO.: 105:28439a, 28442a  
TITLE: Martensitic stainless steels for petroleum-well pipes  
INVENTOR(S): Totsuka, Nobuo; Kimura, Mitsuo; Kurisu, Takao; Nakai, Yoichi  
PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61106747	A	19860524	JP 1984-228592	19841029
PRIORITY APPLN. INFO.:			JP 1984-228592	19841029

AB The stainless steels contain C 0.001-0.25, Si ≤1.0, Mn 0.3-2.0, P ≤ 0.020, S ≤0.003, Cr 11.0-5.0, Al 0.01-0.10, O ≤0.0040, Ca 0.0005-0.0050, and ≥1 of Ti 0.01-0.2, Zr 0.01-0.25, and La 0.001-0.02%, optionally with Ni 0.1-5 and Mo 0.1-3%. Thus, a small ingot was hot-rolled into a strip of 6-mm thick; heated at 1000° for 1 h; air-cooled; and tempered at 600° for 1 h. The strip showed yield point 65.2-73.3 kg/mm<sup>2</sup>, tensile strength 73.4-90.1, and elongation 24.8-36.8%. No stress-corrosion cracks was observed after 500 h in 3% NaCl under CO<sub>2</sub> 20 and H<sub>2</sub>S 0.05 atm at 150° with stressing up to the yield print, and the corrosion rate was 0.081-0.195 mm/yr in the solution. A typical steel contained C 0.21, Cr 13.2, Si 0.49, Mn 0.53, P 0.015, S 0.003, Al 0.040, O 0.0035, Ca 0.0038, and Zr 0.035%. The resp. data were 71.1, 88.1, 24.3, ≤0.7, and 0.38 g for similar steel containing nil Zr.

L18 ANSWER 39 OF 54 EPFULL COPYRIGHT 2009 EPO/FIZ KA on STN

ACCESSION NUMBER:	2004:151456	EPFULL
ENTRY DATE PATENT:	20051006	
ENTRY DATE PUBLICATION:	20061102	
UPDATE DATE PUBLICAT.:	20070509	
DATA UPDATE DATE:	20070509	
DATA UPDATE WEEK:	200719	
TITLE (ENGLISH):	MARTENSITIC STAINLESS STEEL TUBE	
TITLE (FRENCH):	TUBE EN ACIER INOXYDABLE MARTENSITIQUE	
TITLE (GERMAN):	ROHR AUS MARTENSITISCHEM NICHTROSTENDEM STAHL	
INVENTOR(S):	MIYATA, Yukio, c/o I.P.Dept., JFE STEEL CORP., 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100-0011, JP; KIMURA, Mitsuo, c/o I.P.Dept., JFE STEEL CORP., 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100-0011, JP; ITAKURA, N., c/o I.P.Dept., JFE STEEL CORP., 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100-0011, JP; MASAMURA, Katsumi, c/o I.P.Dept. JFE STEEL CORP., 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100-0011, JP	
PATENT APPLICANT(S):	JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome Chiyoda-ku, Tokyo, 100-0011, JP	
PATENT APPL. NUMBER:	4432091	
AGENT:	Gruenecker, Kinkeldey, Stockmair & Schwanhaeuser Anwaltsssozietaet, Maximilianstrasse 58, 80538 Muenchen, DE	
AGENT NUMBER:	100723	
DOCUMENT TYPE:	Patent	
LANGUAGE OF FILING:	Japanese	
LANGUAGE OF PUBL.:	English	
LANGUAGE OF PROCEDURE:	English	
LANGUAGE OF TITLE:	German; English; French	
PATENT INFO TYPE:	EPA1 Application published with search report	
PATENT INFORMATION:	NUMBER	KIND
PATENT INFORMATION:	NUMBER	DATE
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	EP 1717328	A1 20061102

DESIGNATED STATES:	WO 2005073419	20050811
APPLICATION INFO.:	DE FR IT	
	EP 2004-801614	A 20041201
	WO 2004-JP18233	A 20041201
PRIORITY INFO.:	JP 2004-24687	A 20040130
	JP 2004-135975	A 20040430
	JP 2004-329060	A 20041112

ABEN

A martensitic stainless steel pipe having a heat-affected zone with high resistance to intergranular stress corrosion cracking is provided. In particular, the martensitic stainless steel pipe contains less than 0.0100% of C; less than 0.0100% of N; 10% to 14% of Cr; and 3% to 8% of Ni on a mass basis. Alternatively, the martensitic stainless steel pipe may further contain Si, Mn, P, S, and Al within an appropriate content range. The martensitic stainless steel pipe may further contain one or more selected from the group consisting of 4% or less of Cu, 4% or less of Co, 4% or less of Mo, and 4% or less of W and one or more selected from the group consisting of 0.15% or less of Ti, 0.10% or less of Nb, 0.10% or less of V, 0.10% or less of Zr, 0.20% or less of Hf, and 0.20% or less of Ta on a mass basis. The content C sol defined by the following equation is equal to less than 0.0050%: C sol = C - 1/3 + C pre, wherein C pre = 12.0 {Ti/47.9 + 1/2 (Nb/92.9 + Zr/91.2) + 1/3 (V/50.9 + Hf/178.5 + Ta/180.9) - N/14.0} or C pre = 0 when C pre < 0.

L18 ANSWER 40 OF 54 EPFULL COPYRIGHT 2009 EPO/FIZ KA on STN

ACCESSION NUMBER:	2004:124380 EPFULL
ENTRY DATE PATENT:	20050706
ENTRY DATE PUBLICATION:	20060726
UPDATE DATE PUBLICAT.:	20070307
DATA UPDATE DATE:	20070307
DATA UPDATE WEEK:	200710
TITLE (ENGLISH):	HIGH STRENGTH STAINLESS STEEL PIPE FOR LINE PIPE EXCELLENT IN CORROSION RESISTANCE AND METHOD FOR PRODUCTION THEREOF
TITLE (FRENCH):	TUYAU EN ACIER INOXYDABLE HAUTE RESISTANCE POUR UNE CANALISATION PRESENTANT UNE EXCELLENTE RESISTANCE A LA CORROSION, ET PROCEDE DE PRODUCTION ASSOCIE
TITLE (GERMAN):	ROHR AUS HOCHFESTEM NICHTROSTENDEM STAHL MIT HERVORRAGENDER KORROSIONSBESTAENDIGKEIT UND HERSTELLUNGSVERFAHREN DAFUER
INVENTOR(S):	KIMURA, Mitsuo, c/o Intellectual Property Dept., JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 1000011, JP; TAMARI, Takanori, c/o Intellectual Property Dept., JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 1000011, JP; YAMAZAKI, Yoshio, c/o Intellectual Property Dept., JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 1000011, JP; MOCHIZUKI, Ryosuke, c/o Intellectual Property Dept., JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 1000011, JP JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome Chiyoda-ku, Tokyo, 100-0011, JP
PATENT APPLICANT(S):	
PATENT APPL. NUMBER:	4432091
AGENT:	Gruenecker, Kinkeldey, Stockmair & Schwanhaeusser Anwaltsssozietat, Maximilianstrasse 58, 80538 Muenchen, DE
AGENT NUMBER:	100721
DOCUMENT TYPE:	Patent

LANGUAGE OF FILING: Japanese  
 LANGUAGE OF PUBL.: English  
 LANGUAGE OF PROCEDURE: English  
 LANGUAGE OF TITLE: German; English; French  
 PATENT INFO TYPE: EPA1 Application published with search report  
 PATENT INFORMATION:  
 PATENT INFORMATION:

NUMBER	KIND	DATE
NUMBER	KIND	DATE
EP 1683885	A1	20060726
WO 2005042793		20050512
DE FR IT SE		
EP 2004-793183	A	20041022
WO 2004-JP16075	A	20041022
JP 2003-373404	A	20031031
JP 2004-38854	A	20040216
JP 2004-117445	A	20040413
JP 2004-135973	A	20040430

#### ABEN

Provided is a highly corrosion resistant high strength stainless steel pipe for linepipe, having a composition containing 0.001 to 0.015% C, 0.01 to 0.5% Si, 0.1 to 1.8% Mn, 0.03% or less P, 0.005% or less S, 15 to 18% Cr, 0.5% or more and less than 5.5% Ni, 0.5 to 3.5% Mo, 0.02 to 0.2% V, 0.001 to 0.015% N, and 0.006% or less O, by mass, so as to satisfy [Cr + 0.65Ni + 0.6Mo + 0.55Cu - 20C ≥ 18.5], [Cr + Mo + 0.3Si - 43.5C - 0.4Mn - Ni - 0.3Cu - 9N ≥ 11.5] and [C + N ≤ 0.025]. Preferably quenching and tempering treatment is applied to the pipe. The composition may further contain 0.002 to 0.05% Al, and may further contain one or more of Nb, Ti, Zr, B, and W, and/or Cu and Ca. The microstructure preferably contains martensite, ferrite, and residual γ.

(image, imgaf001.tif, drawing)

L18 ANSWER 41 OF 54 EPFULL COPYRIGHT 2009 EPO/FIZ KA on STN

ACCESSION NUMBER: 2004:92277 EPFULL  
 ENTRY DATE PATENT: 20050421  
 ENTRY DATE PUBLICATION: 20060602  
 UPDATE DATE PUBLICAT.: 20061124  
 DATA UPDATE DATE: 20061122  
 DATA UPDATE WEEK: 200647  
 TITLE (ENGLISH): HIGH STRENGTH STAINLESS STEEL PIPE  
 EXCELLENT IN CORROSION RESISTANCE FOR USE IN OIL WELL  
 AND METHOD FOR PRODUCTION THEREOF  
 TITLE (FRENCH): TUYAU EN ACIER INOXYDABLE A HAUTE RESISTANCE A LA  
 CORROSION UTILISE DANS UN PUITS DE PETROLE ET PROCEDE  
 DE PRODUCTION CORRESPONDANT  
 TITLE (GERMAN): ROHR AUS HOCHFESTEM NICHTROSTENDEM STAHL MIT  
 HERVORRAGENDER KORROSIONSBESTAENDIGKEIT ZUR VERWENDUNG  
 IN ERDOELBOHRLOECHERN UND HERSTELLUNGSVERFAHREN DAFUER  
 KIMURA, Mitsuo, c/o Intellectual Property Dept.,  
 JFE STEEL CORP., 2-2-3, Uchisaiwaicho, Chiyoda-ku, Tokyo  
 100-0011, JP; TAMARI, Takanori, c/o Intellectual  
 Property Dept., JFE STEEL CORP., 2-2-3,  
 Uchisaiwaicho, Chiyoda-ku, Tokyo 100-0011, JP; YAMAZAKI,  
 Yoshio, c/o Intellectual Property Dept., JFE STEEL  
 CORP., 2-2-3, Uchisaiwaicho, Chiyoda-ku, Tokyo 100-0011,  
 JP; MOCHIZUKI, Ryosuke, c/o Intellectual Property Dept,  
 JFE STEEL CORP., 2-2-3, Uchisaiwaicho, Chiyoda-ku, Tokyo

PATENT APPLICANT(S): 100-0011, JP  
 JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome  
 Chiyoda-ku, Tokyo, 100-0011, JP  
 PATENT APPL. NUMBER: 4432091  
 AGENT: Gruenecker, Kinkeldey, Stockmair & Schwanhaeusser  
 Anwaltsssozietaet, Maximilianstrasse 58, 80538 Muenchen,  
 DE  
 AGENT NUMBER: 100721  
 DOCUMENT TYPE: Patent  
 LANGUAGE OF FILING: Japanese  
 LANGUAGE OF PUBL.: English  
 LANGUAGE OF PROCEDURE: English  
 LANGUAGE OF TITLE: German; English; French  
 PATENT INFO TYPE: EPA1 Application published with search report  
 PATENT INFORMATION:  
 PATENT INFORMATION:

	NUMBER	KIND	DATE
	NUMBER	KIND	DATE
	EP 1662015	A1	20060531
	WO 2005017222		20050224
DESIGNATED STATES:	DE FR IT SE		
APPLICATION INFO.:	EP 2004-771770	A	20040811
	WO 2004-JP11809	A	20040811
PRIORITY INFO.:	JP 2003-295163	A	20030819
	JP 2004-16076	A	20040123
	JP 2004-71640	A	20040312
	JP 2004-135974	A	20040430
	JP 2004-210904	A	20040720

#### ABEN

A stainless steel pipe for use in oil wells is proposed which has a high strength having a YS of 654 MPa or more and superior corrosion resistance even in a severe corrosive environment in which CO<sub>2</sub> and Cl<sup></sup></sup> are present and the temperature is high, such as up to 230°C. As specific solution means, a pipe contains on a mass percent basis: 0.005% to 0.05% of C; 0.05% to 0.5% of Si; 0.2% to 1.8% of Mn; 0.03% or less of P; 0.005% or less of S; 15.5% to 18% of Cr; 1.5% to 5% of Ni; 1% to 3.5% of Mo; 0.02% to 0.2% of V; 0.01% to 0.15% of N; 0.006% or less of O; and the balance being Fe and unavoidable impurities, in which Cr+0.65Ni+0.6Mo+0.55Cu-20C≥19.5 and Cr+Mo+0.3Si-43.5C-0.4Mn-Ni-0.3Cu-9N≥11.5 are satisfied (where Cr, Ni, Mo, Cu, C, Si, Mn, and N represent the respective contents on a mass percent basis). In addition, quenching treatment and tempering treatment are preferably performed, so that the pipe preferably has a texture containing a martensite phase as a primary phase and 10 to 60 percent by volume of a ferrite phase, or further containing 30 percent by volume or less of an austenite phase. Furthermore, at least one of Al, Cu, Nb, Ti, Zr, W, B, and Ca may also be contained.

(image, imgaf001.tif, drawing)

L18 ANSWER 42 OF 54 EPFULL COPYRIGHT 2009 EPO/FIZ KA on STN

ACCESSION NUMBER: 1999:104047 EPFULL  
 ENTRY DATE PUBLICATION: 20051130  
 UPDATE DATE PUBLICAT.: 20061108  
 DATA UPDATE DATE: 20061108  
 DATA UPDATE WEEK: 200645  
 TITLE (ENGLISH): MARTENSITIC STAINLESS STEEL  
 TITLE (FRENCH): ACIER INOXYDABLE MARTENSIQUE

TITLE (GERMAN): MARTENSITISCHER, ROSTFREIER STAHL  
 INVENTOR(S): MINAMI, Yusuke, NKK Corporation, 1-1-2, Marunouchi,  
                   Chiyoda-ku, Tokyo 100-0005, JP; MASAMURA,  
                   Katsumi, NKK Corporation, 1-2, Marunouchi, Chiyoda-ku,  
                   Tokyo 100-0005, JP; SUZUKI, Toshio, NKK  
                   Corporation, 1-1-2, Marunouchi, Chiyoda-ku, Tokyo  
                   100-0005, JP  
 PATENT APPLICANT(S): JFE Steel Corporation, 2-3, Uchisaiwai-cho 2-chome  
                        Chiyoda-ku, Tokyo, 100-0011, JP  
 PATENT APPL. NUMBER: 4432091  
 AGENT: HOFFMANN EITLE, Patent- und Rechtsanwaelte  
                        Arabellastrasse 4, 81925 Muenchen, DE  
 AGENT NUMBER: 101511  
 DOCUMENT TYPE: Patent  
 LANGUAGE OF FILING: Japanese  
 LANGUAGE OF PUBL.: English  
 LANGUAGE OF PROCEDURE: English  
 LANGUAGE OF TITLE: German; English; French  
 PATENT INFO TYPE: EPB1 Granted patent  
 PATENT INFORMATION:  
 PATENT INFORMATION:

NUMBER	KIND	DATE
NUMBER	KIND	DATE
EP 1143024	B1	20051130
WO 2000037700		20000629
DE FR IT NL		
EP 1999-959849	A	19991216
WO 1999-JP7067	A	19991216
JP 1998-360493	A	19981218
EP 565117	A	
EP 649915	A	
EP 798394	A1	
WO 9603532	A	
JP 7310143	A	
JP 8041599	A	
JP 9125141	A	
JP 9327721	A	
JP 10204587	A	

DESIGNATED STATES:  
 APPLICATION INFO.:  
 PRIORITY INFO.:  
 CITED PATENT LIT.:

CITED NON PATENT LIT.:

- (1) PATENT ABSTRACTS OF JAPAN vol. 1998, no. 03, 27  
 February 1998 (1998-02-27) -& JP 09 291344 A (NIPPON STEEL CORP), 11 November 1997 (1997-11-11)
- (2) PATENT ABSTRACTS OF JAPAN vol. 1996, no. 06, 28  
 June 1996 (1996-06-28) -& JP 08 041599 A (SUMITOMO METAL IND LTD), 13 February 1996 (1996-02-13)
- (3) PATENT ABSTRACTS OF JAPAN vol. 1998, no. 05, 30  
 April 1998 (1998-04-30) -& JP 10 025549 A (NIPPON STEEL CORP), 27 January 1998 (1998-01-27)
- (4) PATENT ABSTRACTS OF JAPAN vol. 017, no. 554  
 (C-1118), 6 October 1993 (1993-10-06) -& JP 05 156409 A (NIPPON STEEL CORP), 22 June 1993 (1993-06-22)
- (5) PATENT ABSTRACTS OF JAPAN vol. 015, no. 317  
 (C-0858), 13 August 1991 (1991-08-13) -& JP 03 120337 A (SUMITOMO METAL IND LTD), 22 May 1991 (1991-05-22)

ABEN

The martensitic stainless steel consists essentially of 0.02% or less C, 0.02% or less N, 0.1 to 0.3% Si, 0.1 to 0.3% Mn, 10 to 13% Cr, 5 to 8% Ni, 1.5 to 3% Mo, by weight, and balance of Fe and inevitable impurities, and satisfies 0.02 to 0.04% (C + N) by weight. Even when the steel is used under an environment containing both a moist carbon

dioxide gas and a moist hydrogen sulfide, it gives excellent corrosion resistance, excellent field welding performance owing to less hardness increase after welding, and small variations in mechanical characteristics under different production conditions. Thus, the steel is suitable as a pipeline.

L18 ANSWER 43 OF 54 EPFULL COPYRIGHT 2009 EPO/FIZ KA on STN

ACCESSION NUMBER: 1997:4277 EPFULL  
 DATA UPDATE DATE: 20031203  
 DATA UPDATE WEEK: 200349  
 TITLE (ENGLISH): Martensitic steel for line pipe  
                   having excellent corrosion resistance and weldability  
 TITLE (FRENCH): Acier martensitique pour tubes avec une  
                   excellant resistance a la corrosion et soudabilite  
 TITLE (GERMAN): Martensitisches Stahl fuer Rohre mit guter  
                   Korrosionsbestaendigkeit und guter Schweissbarkeit  
 INVENTOR(S): Kimura, Mitsuo, c/o Chita Works, Kawasaki Steel  
                   Corp., 1, Kawasakicho 1-chome, Handa-shi, Aichi 475,  
                   JP; Miyata, Yukio, c/o Chita Works, Kawasaki  
                   Steel Corp., 1, Kawasakicho 1-chome, Handa-shi, Aichi  
                   475, JP; Koseki, Tomoya, c/o Chita Works, Kawasaki  
                   Steel Corp., 1, Kawasakicho 1-chome, Handa-shi, Aichi  
                   475, JP; Toyooka, Takaaki, c/o Chita Works, Kawasaki  
                   Steel Corp., 1, Kawasakicho 1-chome, Handa-shi, Aichi  
                   475, JP; Murase, Fumio, c/o Chita Works, Kawasaki Steel  
                   Corp., 1, Kawasakicho 1-chome, Handa-shi, Aichi 475, JP  
                   JFE Steel Corporation, (Steel Corporation, JFE), 2-3,  
                   Uchisaiwai-cho 2-chome Chiyoda-ku, Tokyo, JP  
 PATENT APPLICANT(S): 4432090  
 PATENT APPL. NUMBER:  
 AGENT: Gruenecker, Kinkeldey, Stockmair & Schwanhaeuser  
                   Anwaltsssozietat, Maximilianstrasse 58, 80538 Muenchen,  
                   DE  
 AGENT NUMBER: 100721  
 DOCUMENT TYPE: Patent  
 LANGUAGE OF FILING: English  
 LANGUAGE OF PUBL.: English  
 LANGUAGE OF PROCEDURE: English  
 LANGUAGE OF TITLE: German; English; French  
 PATENT INFO TYPE: EPA1 Application published with search report  
 PATENT INFORMATION:

	NUMBER	KIND	DATE
DESIGNATED STATES:	EP 798394	A1	19971001
APPLICATION INFO.:	DE FR GB IT NL		
PRIORITY INFO.:	EP 1997-105131	A	19970326
	JP 1996-71819	A	19960327
	JP 1996-286848	A	19961029

ABEN

A martensitic steel for a line pipe having excellent corrosion resistance and weldability is disclosed. The martensitic steel contains about:  
 0.02 wt% or less of C, 0.50 wt% or less of Si,  
 0.2 to 3.0 wt% of Mn, 10 to 14 wt% of Cr,  
 0.2 to 7.0 wt% of Ni, 0.2 to 5.0 wt% of Mo,  
 0.1 wt% or less of Al, 0.07 wt% or less of N, and  
 the balance being Fe and incidental impurities; and  
 these elements satisfy substantially the following equations:

$$(Cr\%) + (Mo\%) + 0.1(N\%) - 3(C\%) \geq 12.2,$$

$(Cr\%) + 3.5(Mo\%) + 10(N\%) + 0.2(Ni\%) - 20(C\%) \geq 14.5$ , and

$150(C\%) + 100(N\%) - (Ni\%) - (Mn\%) \leq 4$ .

The martensitic steel may further contain at least one element selected from the group consisting of about 2.0 wt% or less of Cu, about 0.15 wt% or less of Ti, about 0.15 wt% or less of Zr, about 0.15 wt% or less of Ta and

about 0.006 wt% or less of Ca, and

these elements satisfy substantially the following equations:

$(Cr\%) + (Mo\%) + 0.1(N\%) + 3(Cu\%) - 3(C\%) \geq 12.2$ ,

$(Cr\%) + 3.5(Mo\%) + 10(N\%) + 0.2(Ni\%) - 20(C\%) \geq 14.5$ ,

$150(C\%) + 100(N\%) - (Ni\%) - (Mn\%) \leq 4$ .

L18 ANSWER 44 OF 54 USPATFULL on STN

ACCESSION NUMBER: 2009:18611 USPATFULL

TITLE: Martensitic stainless steel  
pipe

INVENTOR(S): Miyata, Yukio, Tokyo, JAPAN  
Kimura, Mitsuo, Tokyo, JAPAN  
Itakura, Noritsugu, Tokyo, JAPAN  
Masamura, Katsumi, Tokyo, JAPAN

PATENT ASSIGNEE(S): JFE Steel Corporation, Tokyo, JAPAN (non-U.S.  
corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 20090017238	A1	20090115
APPLICATION INFO.:	US 2004-587807	A1	20041201 (10)
	WO 2004-JP18233		20041201
			20060728 PCT 371 date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2004-24687	20040130
	JP 2004-135975	20040430
	JP 2004-329060	20041112
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	IP GROUP OF DLA PIPER US LLP, ONE LIBERTY PLACE, 1650 MARKET ST, SUITE 4900, PHILADELPHIA, PA, 19103, US	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	1 Drawing Page(s)	
LINE COUNT:	890	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A martensitic stainless steel pipe having a heat-affected zone with high resistance to intergranular stress corrosion cracking is provided. In particular, the martensitic stainless steel pipe contains less than 0.0100% of C; less than 0.0100% of N; 10% to 14% of Cr; and 3% to 8% of Ni on a mass basis. Alternatively, the martensitic stainless steel pipe may further contain Si, Mn, P, S, and Al within an appropriate content range. The martensitic stainless steel pipe may further contain one or more selected from the group consisting of 4% or less of Cu, 4% or less of Co, 4% or less of Mo, and 4% or less of W and one or more selected from the group consisting of 0.15% or less of Ti, 0.10% or less of Nb, 0.10% or less of V, 0.10% or less of Zr, 0.20% or less of Hf, and 0.20% or less of Ta on

a mass basis. The content C.sub.sol defined by the following equation is equal to less than 0.0050%: C.sub.sol=C-1/3+C.sub.pre, wherein C.sub.pre=12.0{Ti/47.9+1/2(Nb/92.9+Zr/91.2)+1/3(V/50.9+Hf/178.5+Ta/180.9)-N/14.0} or C.sub.pre=0 when C.sub.pre<0.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 45 OF 54 USPATFULL on STN

ACCESSION NUMBER: 2008:354166 USPATFULL

TITLE: Stainless Steel Pipe Having Excellent Expandability for Oil Country Tubular Goods

INVENTOR(S): Kimura, Mitsuo, Tokyo, JAPAN  
Yamazaki, Yoshio, Tokyo, JAPAN  
Tanaka, Masahito, Tokyo, JAPAN

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 20080310990	A1	20081218
APPLICATION INFO.:	US 2006-919158	A1	20060224 (11)
	WO 2006-JP304032		20060224
			20071126 PCT 371 date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2005-131477	20050428
	JP 2005-342269	20051128
	JP 2005-342270	20051128
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	FRISHAUF, HOLTZ, GOODMAN & CHICK, PC, 220 Fifth Avenue, 16TH Floor, NEW YORK, NY, 10001-7708, US	
NUMBER OF CLAIMS:	14	
EXEMPLARY CLAIM:	1	
LINE COUNT:	1108	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB There is provided a cost-effective stainless steel pipe having excellent expandability for oil country tubular goods, the stainless steel pipe having excellent CO.sub.2 corrosion resistance under a severe corrosive environment containing CO.sub.2, Cl.sup.-, and the like. The stainless steel pipe having excellent expandability for oil country tubular goods contains 0.05% or less C, 0.50% or less Si, Mn: 0.10% to 1.50%, 0.03% or less P, 0.005% or less S, 10.5% to 17.0% Cr, 0.5% to 7.0% Ni, 3.0% or less Mo, 0.05% or less Al, 0.20% or less V, 0.15% or less N, and 0.008% or less O, optionally at least one selected from Nb, Cu, Ti, Zr, Ca, B, and W, in a specific content, and the balance being Fe and incidental impurities, wherein a microstructure mainly having a tempered martensitic phase has an austenitic phase content exceeding 20%.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 46 OF 54 USPATFULL on STN

ACCESSION NUMBER: 2007:86230 USPATFULL

TITLE: Highly anticorrosive high strength stainless steel pipe for linepipe and method for manufacturing same

INVENTOR(S): Kimura, Mitsuo, Aichi, JAPAN  
Tamari, Takanori, Aichi, JAPAN  
Yamazaki, Yoshio, Aichi, JAPAN  
Mochizuki, Ryosuke, Aichi, JAPAN

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 20070074793	A1	20070405
APPLICATION INFO.:	US 2004-576885	A1	20041022 (10)
	WO 2004-JP16075		20041022
			20060424 PCT 371 date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2003-373404	20031031
	JP 2004-38854	20040216
	JP 2004-117445	20040413
	JP 2004-135973	20040430

DOCUMENT TYPE:

FILE SEGMENT:

LEGAL REPRESENTATIVE:

IP GROUP OF DLA PIPER US LLP, ONE LIBERTY PLACE, 1650 MARKET ST, SUITE 4900, PHILADELPHIA, PA, 19103, US

NUMBER OF CLAIMS:

25

EXEMPLARY CLAIM:

1-24

NUMBER OF DRAWINGS:

3 Drawing Page(s)

LINE COUNT:

1284

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A highly corrosion resistant high strength stainless steel pipe for linepipe, having a composition containing about 0.001 to about 0.015% C, about 0.01 to about 0.5% Si, about 0.1 to about 1.8% Mn, about 0.03% or less P, about 0.005% or less S, about 15 to about 18% Cr, about 0.5% or more and less than about 5.5% Ni, about 0.5 to about 3.5% Mo, about 0.02 to about 0.2% V, about 0.001 to about 0.015% N, and about 0.006% or less O, by mass, so as to satisfy  $(Cr+0.65Ni+0.6Mo+0.55Cu-20C\geq 18.5)$ ,  $Cr+Mo+0.3Si-43.5C-0.4Mn-Ni-0.3Cu-9N\geq 11.5$  and  $(C+N\leq 0.025)$ . Preferably quenching and tempering treatment is applied to the pipe. The composition may further contain about 0.002 to about 0.05% Al, and may further contain one or more of Nb, Ti, Zr, B, and W, and/or Cu and Ca. The microstructure preferably contains martensite, ferrite, and residual  $\gamma$ .

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 47 OF 54	USPATFULL	on STN
ACCESSION NUMBER:	2006:285377 USPATFULL	
TITLE:	High strength stainless steel pipe excellent in corrosion resistance for use in oil well and method for production thereof	
INVENTOR(S):	Kimura, Mitsuo, Tokyo, JAPAN Tamari, Takanori, Tokyo, JAPAN Yamazaki, Yoshio, Tokyo, JAPAN Mochizuki, Ryosuke, Tokyo, JAPAN	
PATENT ASSIGNEE(S):	JFE STEEL CORPORATION, Tokyo, JAPAN (non-U.S. corporation)	

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 20060243354	A1	20061102
APPLICATION INFO.:	US 2004-568154	A1	20040811 (10)
	WO 2004-JP11809		20040811
			20060213 PCT 371 date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2003-295163	20030819

JP 2004-16076      20040123  
 JP 2004-71640      20040312  
 JP 2004-135974      20040430  
 JP 2004-210904      20040720  
**DOCUMENT TYPE:** Utility  
**FILE SEGMENT:** APPLICATION  
**LEGAL REPRESENTATIVE:** IP GROUP OF DLA PIPER RUDNICK GRAY CARY US LLP, 1650 MARKET ST, SUITE 4900, PHILADELPHIA, PA, 19103, US  
**NUMBER OF CLAIMS:** 23  
**EXEMPLARY CLAIM:** 1  
**NUMBER OF DRAWINGS:** 2 Drawing Page(s)  
**LINE COUNT:** 1325

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

**AB** A stainless steel pipe for use in oil wells is proposed which has a high strength having a YS of 654 MPa or more and superior corrosion resistance even in a severe corrosive environment in which CO<sub>sub.2</sub> and Cl<sub>sup.-</sub> are present and the temperature is high, such as up to 230° C. The pipe contains on a mass percent basis: 0.005% to 0.05% of C; 0.05% to 0.5% of Si; 0.2% to 1.8% of Mn; 0.03% or less of P; 0.005% or less of S; 15.5% to 18% of Cr; 1.5% to 5% of Ni; 1% to 3.5% of Mo; 0.02% to 0.2% of V; 0.01% to 0.15% of N; 0.006% or less of O; and the balance being Fe and unavoidable impurities, in which Cr+0.65Ni+0.6Mo+0.55Cu-20C≥19.5 and Cr+Mo+0.3Si-43.5C-0.4Mn--Ni-0.3Cu-9N≥11.5 are satisfied (where Cr, Ni, Mo, Cu, C, Si, Mn, and N represent the respective contents on a mass percent basis). In addition, quenching treatment and tempering treatment are preferably performed, so that the pipe preferably has a texture containing a martensite phase as a primary phase and 10 to 60 percent by volume of a ferrite phase, or further containing 30 percent by volume or less of an austenite phase. Furthermore, at least one of Al, Cu, Nb, Ti, Zr, W, B, and Ca may also be contained.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 48 OF 54 USPATFULL on STN  
**ACCESSION NUMBER:** 2004:303430 USPATFULL  
**TITLE:** Stainless-steel pipe for oil well and process for producing the same  
**INVENTOR(S):** Kimura, Mitsuo, Tokyo, JAPAN  
                   Tamari, Takanori, Tokyo, JAPAN  
                   Toyooka, Takaaki, Tokyo, JAPAN

	NUMBER	KIND	DATE
<b>PATENT INFORMATION:</b>	US 20040238079	A1	20041202
<b>APPLICATION INFO.:</b>	US 2004-488980	A1	20040310 (10)
	WO 2003-JP7709		20030618

	NUMBER	DATE
<b>PRIORITY INFORMATION:</b>	JP 2002-178974	20020619
	JP 2003-114775	20030418
	JP 2003-156234	20030602
<b>DOCUMENT TYPE:</b>	Utility	
<b>FILE SEGMENT:</b>	APPLICATION	
<b>LEGAL REPRESENTATIVE:</b>	IP DEPARTMENT OF PIPER RUDNICK LLP, ONE LIBERTY PLACE, SUITE 4900, 1650 MARKET ST, PHILADELPHIA, PA, 19103	
<b>NUMBER OF CLAIMS:</b>	16	
<b>EXEMPLARY CLAIM:</b>	1	
<b>LINE COUNT:</b>	1124	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A steel composition contains: 0.05% or less of C; 0.5% or less of Si; 0.20% to 1.80% of Mn; 0.03% or less of P; 0.005% or less of S; 14.0% to 18.0% of Cr; 5.0% to 8.0% of Ni; 1.5% to 3.5% of Mo; 0.5% to 3.5% of Cu; 0.05% or less of Al; 0.20% or less of V; 0.01% to 0.15% of N; and 0.006% or less of O on a mass basis, and satisfies the following expressions:  
 $Cr+0.65Ni+0.6Mo+0.55Cu-20C \geq 18.5$  and  
 $Cr+Mo+0.3Si-43.5C-0.4Mn-Ni-0.3Cu-9N \leq 11$  (where Cr, Ni, Mo, Cu, C, Si, Mn, and N represent their respective contents (mass %)). After such a steel pipe material is formed into a steel pipe, the steel pipe is quenched by cooling after heating to a temperature of the A<sub>sub</sub>.C<sub>3</sub> transformation point or more and tempered at a temperature of the A<sub>sub</sub>.C<sub>1</sub> transformation point or less. The composition may further contain at least one element of Nb and Ti; at least one element selected from the group consisting of Zr, B, and W; or Ca, singly or in combination. Preferably, the steel pipe has a martensitic structure containing 5 to 25 percent by volume of a residual austenite phase, or further containing 5% percent by volume or less of a ferrite phase. Thus, the resulting stainless steel pipe for oil country tubular goods exhibits a superior corrosion resistance even in extremely severe, corrosive environments containing carbon dioxide gas (CO<sub>sub</sub>.2), chloride ions (Cl<sup>sup</sup>.-), or the like.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 49 OF 54 USPATFULL on STN

ACCESSION NUMBER: 2003:97492 USPATFULL

TITLE: Method for making high-strength high-toughness martensitic stainless steel seamless pipe

INVENTOR(S): Miyata, Yukio, Handa-shi, JAPAN  
 Kimura, Mitsuo, Handa-shi, JAPAN

PATENT ASSIGNEE(S): Toyooka, Takaaki, Handa-shi, JAPAN  
 KAWASAKI STEEL CORPORATION, KOBE-SHI, JAPAN (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 20030066580	A1	20030410
	US 6846371	B2	20050125
APPLICATION INFO.:	US 2002-226916	A1	20020823 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2001-259889	20010829
	JP 2002-128533	20020430
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	SCHNADER HARRISON SEGAL & LEWIS, LLP, 1600 MARKET STREET, SUITE 3600, PHILADELPHIA, PA, 19103	

NUMBER OF CLAIMS: 13

EXEMPLARY CLAIM: 1

NUMBER OF DRAWINGS: 2 Drawing Page(s)

LINE COUNT: 614

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A method of producing a high-strength high-toughness martensitic stainless steel seamless pipe which includes heating a martensitic stainless steel raw material to an austenitic range and subjecting the raw material to piercing and elongating to form an original pipe. The original pipe is cooled to form a structure substantially composed of martensite in the original pipe. The original

pipe is reheated to a temperature in the dual-phase range between the A.sub.c1 transformation point and the A.sub.c3 transformation point, and is subjected to finishing rolling at an initial rolling temperature T ( $^{\circ}$  C.) between the A.sub.c1 transformation point and the A.sub.c3 transformation point. The original pipe is then cooled to form a processed pipe. The processed pipe is tempered at a temperature below the A.sub.c1 transformation point. The reduction in area R in the finishing rolling step may be in the range of 10% to 90%, and the initial rolling temperature T and the reduction in area R may satisfy the relationship  $800 \leq T - 0.625R \leq 850$ .

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 50 OF 54 USPATFULL on STN  
 ACCESSION NUMBER: 2002:268278 USPATFULL  
 TITLE: High Cr steel pipe for line pipe  
 INVENTOR(S): Miyata, Yukio, Aichi, JAPAN  
                   Kimura, Mitsuo, Aichi, JAPAN  
                   Toyooka, Takaaki, Aichi, JAPAN  
 PATENT ASSIGNEE(S): Kawasaki Steel Corporation, Kobe, JAPAN (non-U.S.  
 corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6464802	B1	20021015
	WO 2000046415		20000810
APPLICATION INFO.:	US 2000-647530		20001002 (9)
	WO 2000-JP533		20000201
			20001002 PCT 371 date

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1999-25432	19990202
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	
PRIMARY EXAMINER:	Yee, Deborah	
LEGAL REPRESENTATIVE:	Young & Thompson	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Figure(s); 2 Drawing Page(s)	
LINE COUNT:	503	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A high-Cr steel pipe for line pipes having further improved HAZ toughness and hot workability is provided by limiting the composition to:

C: 0.02% or less, Si: 0.5% or less, Mn: 0.2 to 3.0%, Cr: 10.0 to 14.0%, Ni: more than 2.0 to 3.0%, N: 0.02% or less, preferably Nb: 0.3% or less, and the balance being Fe and incidental impurities.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 51 OF 54 USPATFULL on STN  
 ACCESSION NUMBER: 2000:141677 USPATFULL  
 TITLE: Method of manufacturing high chromium  
                   martensite steel pipe having  
                   excellent pitting resistance  
 INVENTOR(S): Miyata, Yukio, Aichi, Japan  
                   Kimura, Mitsuo, Aichi, Japan  
                   Koseki, Tomoya, Aichi, Japan  
                   Toyooka, Takaaki, Aichi, Japan

PATENT ASSIGNEE(S): Murase, Fumio, Aichi, Japan  
Kawasaki Steel Corporation, Japan (non-U.S.  
corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6136109	20001024	
APPLICATION INFO.:	US 1998-181829	19981028	(9)
RELATED APPLN. INFO.:	Division of Ser. No. US 1996-634860, filed on 19 Apr 1996, now patented, Pat. No. US 5858128, issued on 12 Jan 1999		

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1995-97063 JP 1996-36247	19950421 19960223
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	Granted	
PRIMARY EXAMINER:	Wyszomierski, George	
LEGAL REPRESENTATIVE:	Miller, Austin R.	
NUMBER OF CLAIMS:	12	
EXEMPLARY CLAIM:	9	
LINE COUNT:	849	

AB A high-Cr martensite steel pipe having excellent pitting resistance and method for manufacturing the same, which involves forming a pipe of steel including C: about 0.03 wt % or less, Si: about 0.5 wt % or less, Mn: about 0.5-3.0 wt %, Cr: about 10.0-14.0 wt %, Ni: about 0.2-2.0 wt %, Cu: about 0.2-1.0 wt % and N: about 0.03 wt % or less with the balance being Fe and incidental impurities, and having a value X shown as defined in the following formula (1) of about 12.2 or more. The pipe is quenched after austenitizing it at a temperature substantially equal to an A<sub>sub</sub>.C<sub>3</sub> point or higher, and the pipe is annealed in a temperature range from about 550° C. or higher to a temperature lower than an A<sub>sub</sub>.C<sub>1</sub> point.

$$\text{value } X = (\text{Cr}\%) + 3(\text{Cu}\%) - 3(\text{C}\%) \quad (1)$$

The high-Cr martensite steel pipe made by this method exhibits excellent pitting resistance and overall surface corrosion resistance even in an environment containing a carbonic acid gas, and further exhibits excellent weldability and toughness in the welding-heat-affected zones.

L18 ANSWER 52 OF 54 USPATFULL on STN  
ACCESSION NUMBER: 1999:145909 USPATFULL  
TITLE: Martensitic steel for line pipe  
having excellent corrosion resistance and weldability  
INVENTOR(S): Kimura, Mitsuo, Aichi, Japan  
Miyata, Yukio, Aichi, Japan  
Koseki, Tomoya, Aichi, Japan  
Toyooka, Takaaki, Aichi, Japan  
Murase, Fumio, Aichi, Japan  
PATENT ASSIGNEE(S): Kawasaki Steel Corporation, Japan (non-U.S.  
corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5985209		19991116
APPLICATION INFO.:	IHS 1997-821512		19970321 (8)

PRIORITY INFORMATION: -----  
JP 1996-71819 19960327  
JP 1996-286848 19961029

DOCUMENT TYPE: Utility  
FILE SEGMENT: Granted  
PRIMARY EXAMINER: Yee, Deborah  
LEGAL REPRESENTATIVE: Miller, Austin R.  
NUMBER OF CLAIMS: 5  
EXEMPLARY CLAIM: 1  
LINE COUNT: 800

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A martensitic steel for a line pipe having excellent corrosion resistance and weldability is disclosed. The martensitic steel contains about:

0.02 wt % or less of C, 0.50 wt % or less of Si,  
0.2 to 3.0 wt % of Mn, 10 to 14 wt % of Cr,  
0.2 to 7.0 wt % of Ni, 0.2 to 5.0 wt % of Mo,  
0.1 wt % or less of Al, 0.07 wt % or less of N, and  
the balance being Fe and incidental impurities; and  
these elements satisfy substantially the following equations:

$$(Cr \%) + (Mo \%) + 0.1(N \%) - 3(C \%) \geq 12.2,$$
$$(Cr \%) + 3.5(Mo \%) + 10(N \%) + 0.2(Ni \%) - 20(C \%) \geq 14.5, \text{ and}$$
$$150(C \%) + 100(N \%) - (Ni \%) - (Mn \%) \leq 4.$$

The martensitic steel may further contain at least one element selected from the group consisting of

about 2.0 wt % or less of Cu, about 0.15 wt % or less of Ti, about 0.15 wt % or less of Zr, about 0.15 wt % or less of Ta and  
about 0.006 wt % or less of Ca, and

these elements satisfy substantially the following equations:

$$(Cr \%) + (Mo \%) + 0.1(N \%) + 3(Cu \%) - 3(C \%) \geq 12.2,$$
$$(Cr \%) + 3.5(Mo \%) + 10(N \%) + 0.2(Ni \%) - 20(C \%) \geq 14.5,$$
$$150(C \%) + 100(N \%) - (Ni \%) - (Mn \%) \leq 4.$$

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 53 OF 54 USPATFULL on STN  
ACCESSION NUMBER: 1999:3805 USPATFULL  
TITLE: High chromium martensitic steel pipe  
having excellent pitting resistance and method of  
manufacturing  
INVENTOR(S): Miyata, Yukio, Aichi, Japan  
Kimura, Mitsuo, Aichi, Japan  
Koseki, Tomoya, Aichi, Japan  
Toyooka, Takaaki, Aichi, Japan  
Murase, Fumio, Aichi, Japan  
PATENT ASSIGNEE(S): Kawasaki Steel Corporation, Japan (non-U.S.)

corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5858128		19990112
APPLICATION INFO.:	US 1996-634860		19960419 (8)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1995-97063	19950421
	JP 1996-36247	19960223
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	Granted	
PRIMARY EXAMINER:	Ip, Sikyin	
LEGAL REPRESENTATIVE:	Miller, Austin R.	
NUMBER OF CLAIMS:	4	
EXEMPLARY CLAIM:	4	
LINE COUNT:	761	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A high-Cr martensitic steel pipe having excellent pitting resistance and method for manufacturing the same, which involves forming a pipe of steel including C: about 0.03 wt % or less, Si: about 0.5 wt % or less, Mn: about 0.5-3.0 wt %, Cr: about 10.0-14.0 wt %, Ni: about 0.2-2.0 wt %, Cu: about 0.2-1.0 wt % and N: about 0.03 wt % or less with the balance being Fe and incidental impurities, and having a value X shown as defined in the following formula (1) of about 12.2 or more. The pipe is quenched after austenitizing it at a temperature substantially equal to an Ac.sub.3 point or higher, and the pipe is tempered in a temperature range from about 550° C. or higher to a temperature lower than an Ac.sub.1 point.

$$\text{value } X = (\text{Cr } \%) + 3(\text{Cu } \%) - 3(\text{C } \%) \quad (1)$$

The high-Cr martensitic steel pipe made by this method exhibits excellent pitting resistance and general corrosion resistance even in an environment containing a carbonic acid gas, and further exhibits excellent weldability and toughness in the heat-affected zones.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L18 ANSWER 54 OF 54 USPAT2 on STN  
ACCESSION NUMBER: 2003:97492 USPAT2  
TITLE: Method for making high-strength high-toughness martensitic stainless steel seamless pipe  
INVENTOR(S): Miyata, Yukio, Handa, JAPAN  
                  Kimura, Mitsuo, Handa, JAPAN  
                  Toyooka, Takaaki, Handa, JAPAN  
PATENT ASSIGNEE(S): JFE Steel Corporation, JAPAN (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6846371	B2	20050125
APPLICATION INFO.:	US 2002-226916		20020823 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2001-259889	20010829
	JP 2002-128533	20020430
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	GRANTED	

PRIMARY EXAMINER: Yee, Deborah  
LEGAL REPRESENTATIVE: Piper Rudnick LLP  
NUMBER OF CLAIMS: 13  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 2 Drawing Figure(s); 2 Drawing Page(s)  
LINE COUNT: 576  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A method of producing a high-strength high-toughness martensitic stainless steel seamless pipe which includes heating a martensitic stainless steel raw material to an austenitic range and subjecting the raw material to piercing and elongating to form an original pipe. The original pipe is cooled to form a structure substantially composed of martensite in the original pipe. The original pipe is reheated to a temperature in the dual-phase range between the A.sub.c1 transformation point and the A.sub.c3 transformation point, and is subjected to finishing rolling at an initial rolling temperature T (° C.) between the A.sub.c1 transformation point and the A.sub.c3 transformation point. The original pipe is then cooled to form a processed pipe. The processed pipe is tempered at a temperature below the A.sub.c1 transformation point. The reduction in area R in the finishing rolling step may be in the range of 10% to 90%, and the initial rolling temperature T and the reduction in area R may satisfy the relationship  $800 \leq T - 0.625R \leq 850$ .

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
CONNECT CHARGES	27.82	50.46
NETWORK CHARGES	1.12	2.66
SEARCH CHARGES	107.52	212.78
DISPLAY CHARGES	148.15	359.06
FULL ESTIMATED COST	284.61	624.96
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-31.16	-41.82

IN FILE 'CAPLUS, INSPEC, SCISEARCH, EPFULL, GBFULL, USPATFULL, USPATOLD, USPAT2'  
AT 16:50:33 ON 03 MAR 2009

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ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF

LOGOFF? (Y)/N/HOLD:y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	284.61	624.96
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-31.16	-41.82

STN INTERNATIONAL LOGOFF AT 16:50:41 ON 03 MAR 2009